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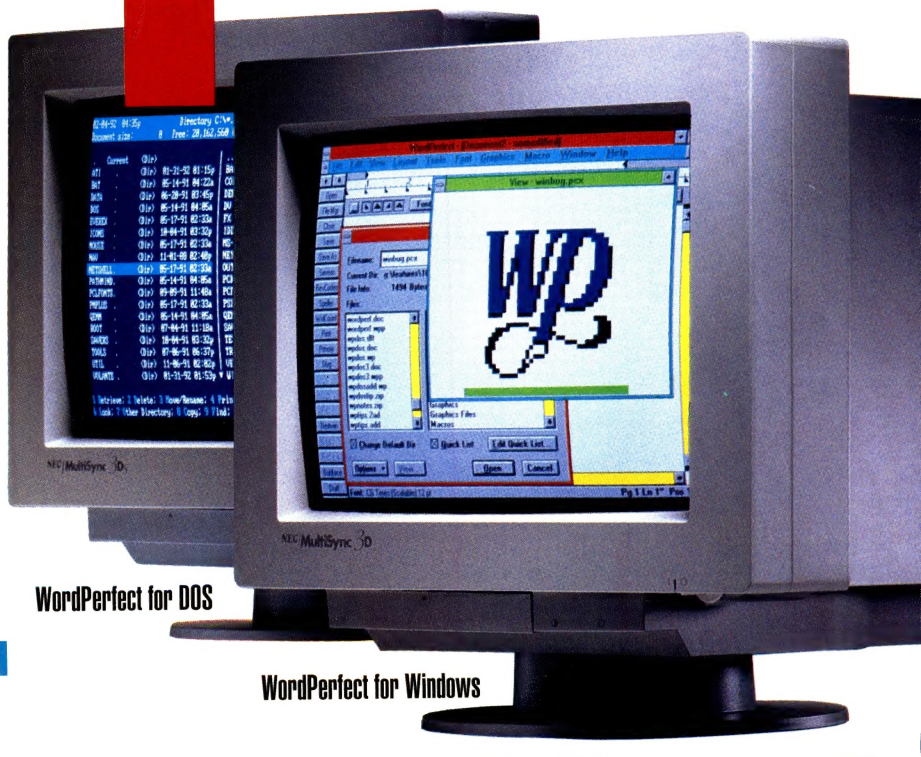
The Magazine for Business Computing Experts

April 1992

PC Computing

EXCLUSIVE! 101 HOT TIPS

WordPerfect to the Max!



WordPerfect for DOS

WordPerfect for Windows

7 Lightning-Fast Modems—Cheap!

12 Secrets to Stretch Laptop Battery Life

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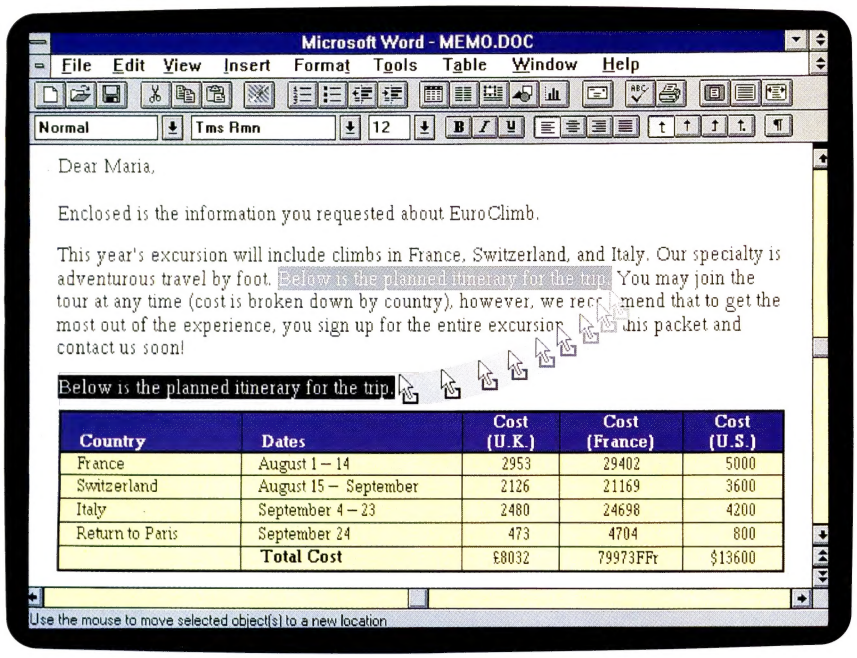
Introducing new Wo

The Toolbar lets you do everyday things with the click of a button.



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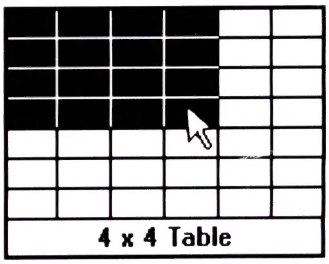
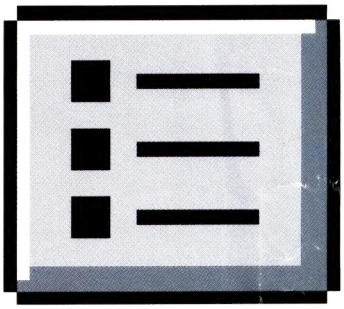
Rearranging a document couldn't be any easier. With new Word 2.0 you can drag and drop text wherever you want.



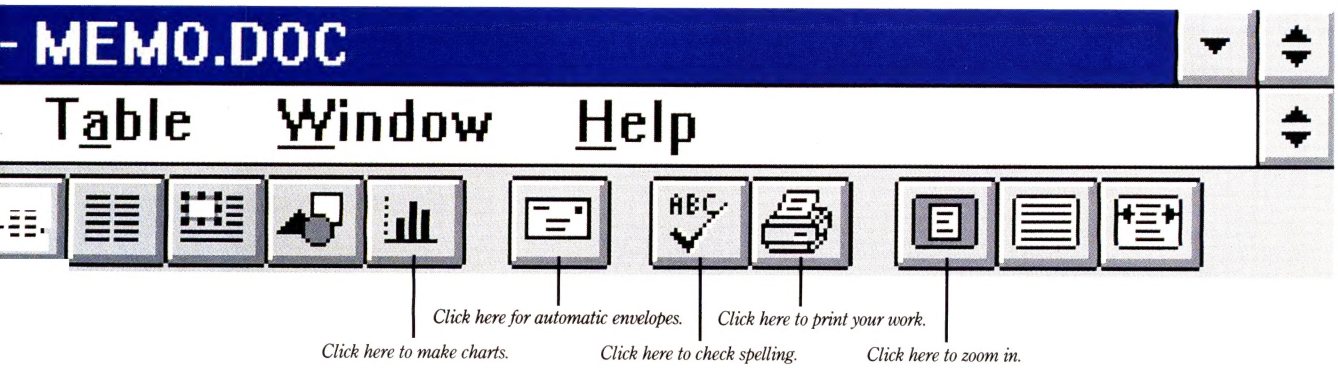
All it takes is one click on the Toolbar and presto, instant tables.

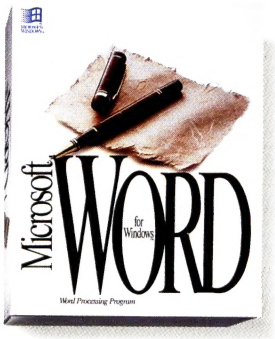


Click this Toolbar button and get instant bullets.

The mouse makes everyday tasks as easy as click, click, click.

rd for Windows 2.0.





When it comes to word processing, really nothing could be more natural than using the all-new Microsoft® Word for Windows™. You see, Word 2.0 makes those everyday word processing tasks easy.

Which means you can now concentrate on what you're actually doing. Rather than how you're actually going to do it.

This is possible for a number of reasons. Like our unique Toolbar™ feature. It lets you do those things you do most often with one simple click of a button.

Of course, looks count for something, too. With Word you can bring in a table of numbers from Microsoft Excel. Or with the new built-in drawing, charting and shading features, along with the ability to move anything on-screen with a drag and drop, you'll find yourself adding some very very cool effects.

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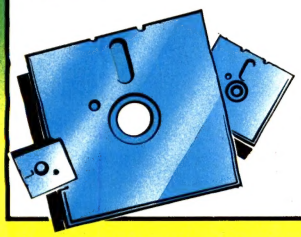

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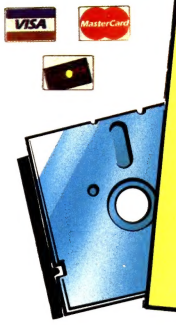

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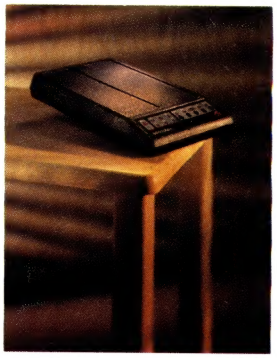

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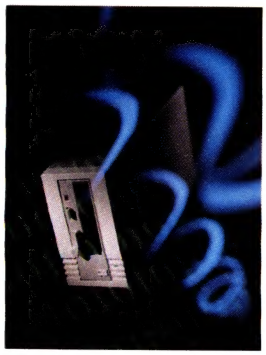

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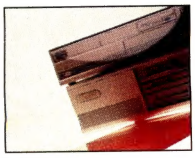

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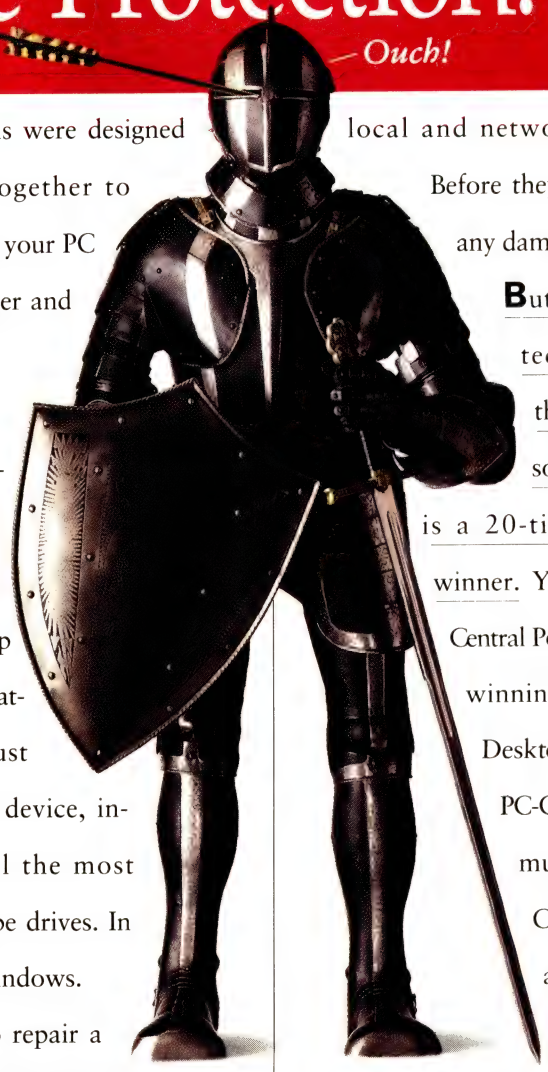

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Novell Network optimized	Yes	No	No
Multiple sheets	Yes	No	Yes
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Easiest to Use	**Yes**		
SpeedBar	Yes	No	No
Print-To-Fit	Yes	*	*
Read Lotus 1-2-3 files, styles & macros	Yes	Yes	Yes
Best Performance	**Yes**		
All features in 640K	Yes	?	No
Price	**$495**	**$495**	**$595**

? Yes, but almost no room remains for data.
*Yes, but requires attaching an add-in.

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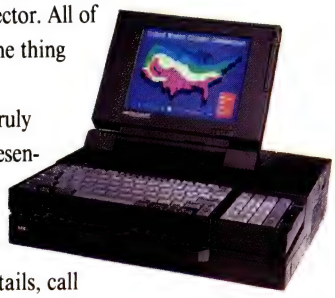

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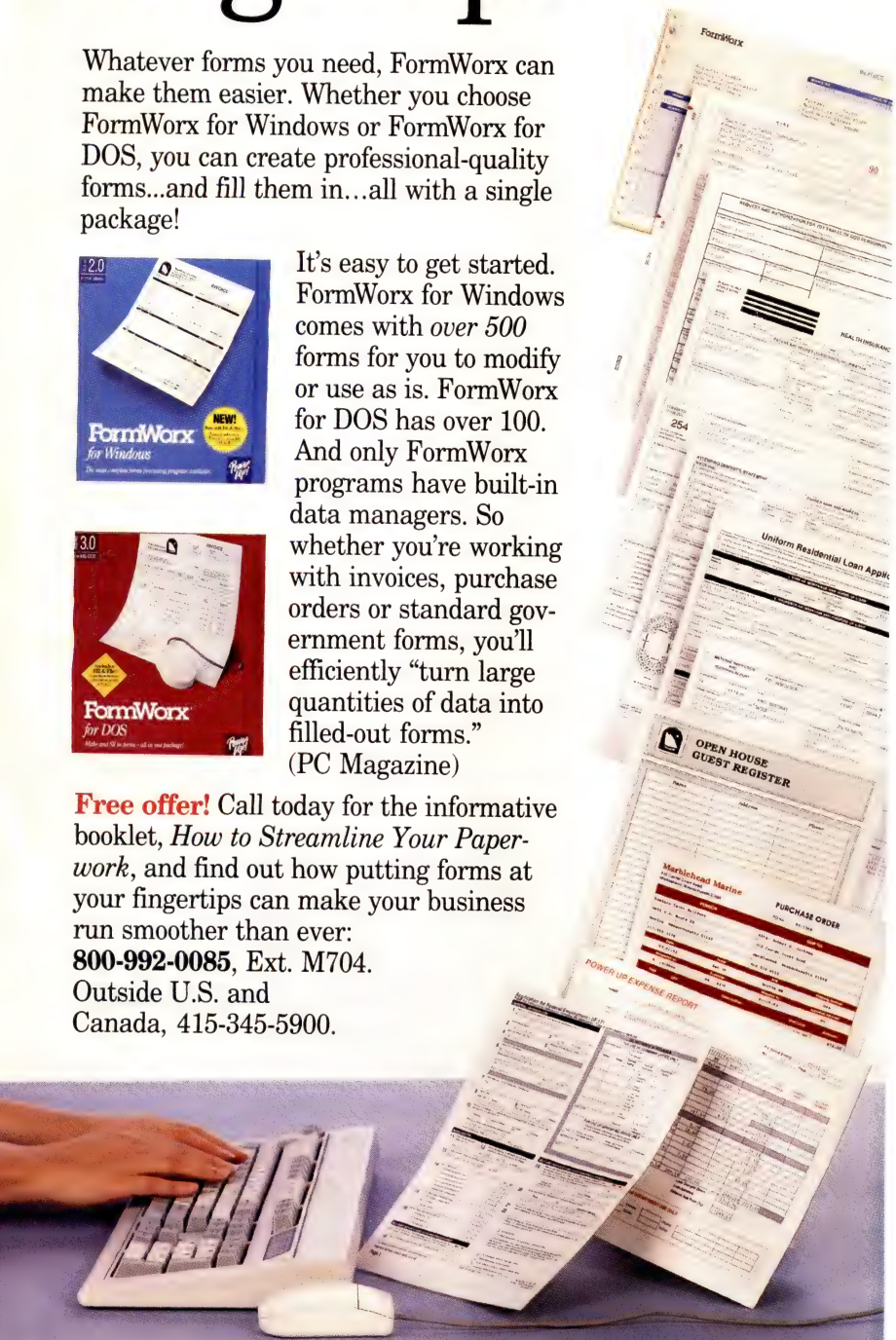

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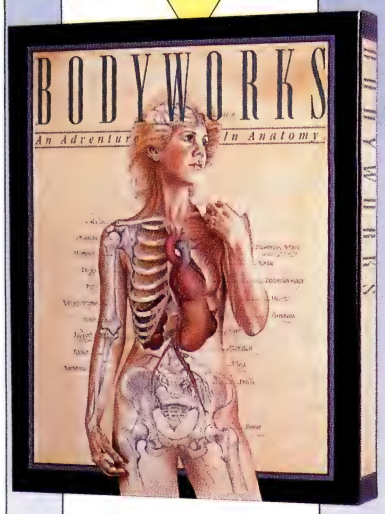

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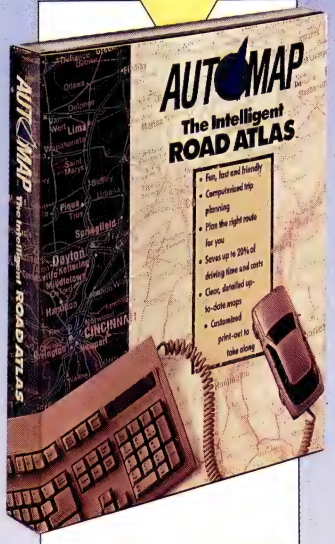

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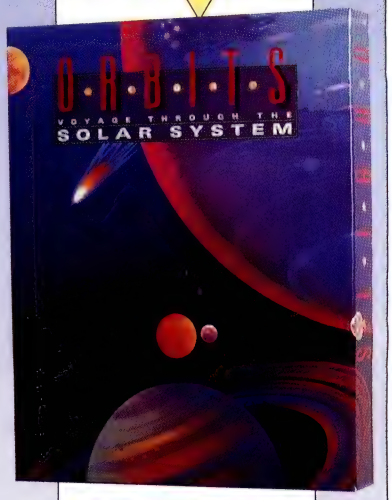

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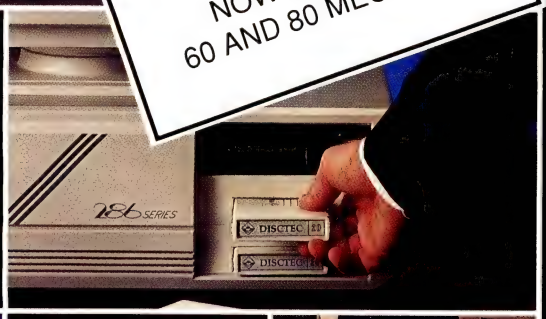

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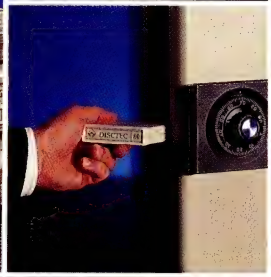

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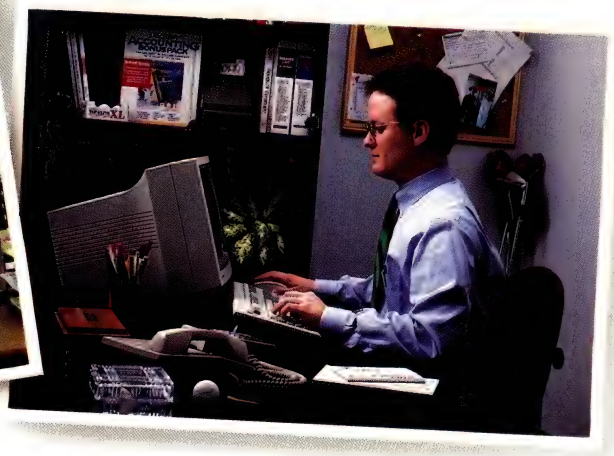

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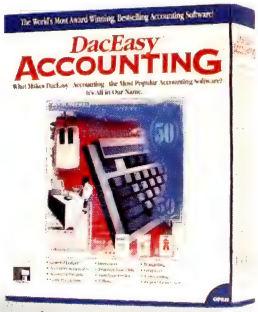

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Let's Avoid Easy Romanticisms and Get at Our Real Business Problems

WHAT HAPPENS AFTER TOO MUCH TIME AT 35,000 FEET? The air is thin in DC10s, so strange thoughts bubble in the brain. Herewith are two examples of musings from on high.

STRANGE THOUGHT #1. As we consider the value of PCs as competitive tools for our companies, we must make every effort to avoid easy romanticisms and empty rhetoric. We need to get past the thick haze of catchphrases to consider what's really going on in the business world and what PCs can help us do about it.

We talk so easily today about creating, moving, and evaluating information. We point to the PC as a competitive panacea because it shapes information effectively, presents it handsomely, and moves it around with increasing breadth and efficiency. This view is so widespread that it's accepted as gospel.

Hogwash.

Information is not the root of our competitive problems these days. Think about the ramifications of the greatest information disaster in American history—Pearl Harbor.

For a long time after the Japanese attack, historians made the same assumptions about the situation in Hawaii that we make today in business: that the right information hadn't reached the right person. It was a systems problem. If only intelligence gathering, information flow, and data handling had been better, this disaster could have been averted.

That's the presumption we make today. If only we can get more servers up, access more databases, produce more charts, scan in more images . . . everything will be fine. Our decisions will be better informed and more effective, and our enemies will be confounded.

Well, now, we know this wasn't true at Pearl, and it's not true in business today, either.

The truth is that the U.S. military had many indications of an attack, that this information got to Hawaii in numerous forms, that much of the information got to who it should have reached, and that important components of the American military were worried sick about Japanese intentions and our lack of preparedness.

And the Pearl Harbor organization did not take one single effective action. They sat on their rumps until it was far too late to respond effectively, then they responded inappropriately to the attack. The result: unmitigated disaster.

Today, we in business are eerily similar to those American military grandees in Hawaii. We wrap ourselves in a cocoon of assumptions and blame our problems on abstract notions like information flow. If only we could get all that data working for us, we'd know what to do.

But let's be frank. How many of our core competitive problems derive from businesses lacking critical information? Does GM not have the information necessary to produce a successful car? Of course it does. Is there any mystery about what the Japanese are doing in the auto business to win market share? None whatsoever.

The fact is that our businesses know exactly what they need to know to succeed, to dominate, and to keep the Japanese from perpetrating an economic Pearl Harbor in the 1990s. But, like the leaders in 1941, businesses today lack the will and the courage to take bold steps.

Our competitive problems come from within ourselves—not from lack of information or insufficient technology. We need to move ahead full force at strengthening our PCs. But we must strive even harder to take a flexible and clear-sighted approach to our business problems. To a great extent, our unwillingness to recognize how much the world has changed is the bug in the business system today.

STRANGE THOUGHT #2. Wouldn't it be incredible if a programming language existed that was so powerful it required just four commands? Imagine if this language were modular and offered all the advantages of object orientation—small units of code could handle tiny chores brilliantly and then be inherited by innumerable complex processes, bringing their benefits to wildly diverse situations. Consider the impact if the language were so flexible that altering a mere 10 percent of the code could produce a change equivalent to transforming a frog into a prince.

Well, this language does exist. It's called the genetic code, and it's hard-wired into the cells of all living things. No computer programming language comes close to achieving the power, portability, and extensibility of DNA.

Presidents are programmed with the same chemical commands as paramecium, and both contain substantial amounts of code inherited from dinosaurs.

Our businesses have the information to succeed, but lack courage.

Imagine the impact if someone devised a computer language this granular, this potent. Robotics and artificial intelligence would be greatly enhanced. Even more important, such a language would create a universal way to express anything as anything else—horses could be compared to spacecraft, because both would be expressions of the same form of description. In *The Glass Bead Game*, German author Hermann Hesse speculated about a set of symbols that could describe anything. In the book, experts express water as a sound, love as touch, music as sight. Perhaps this vision, once dismissed as unrealistic, isn't so fanciful after all.

Sound farfetched? Then why is Bill Gates's only major investment aside from Microsoft a genetic engineering company? ◩

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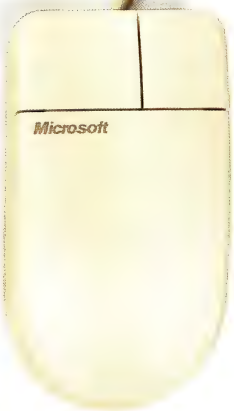

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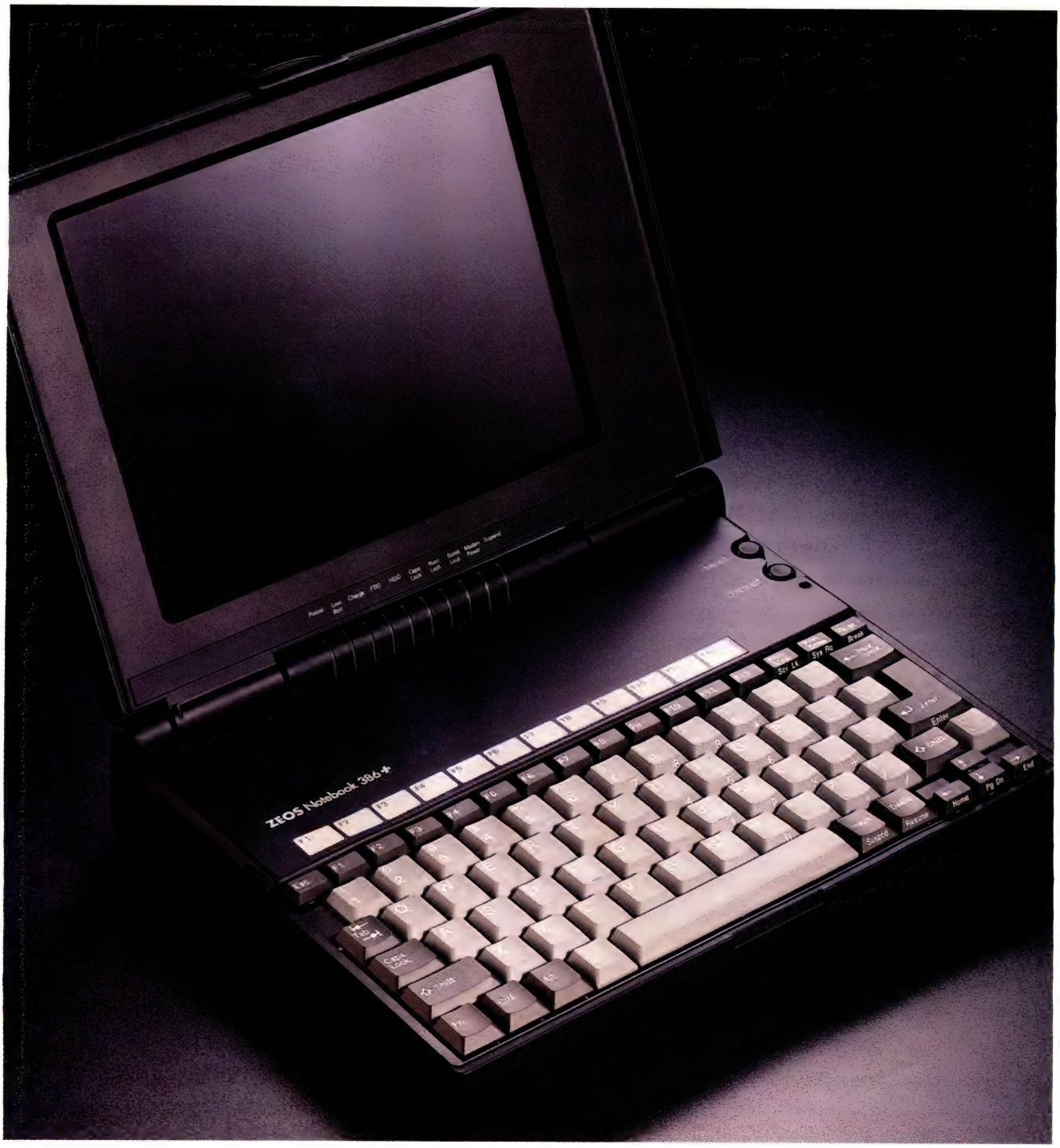

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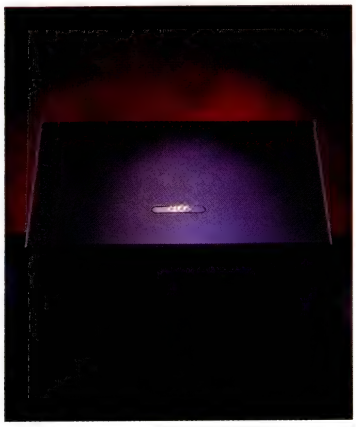

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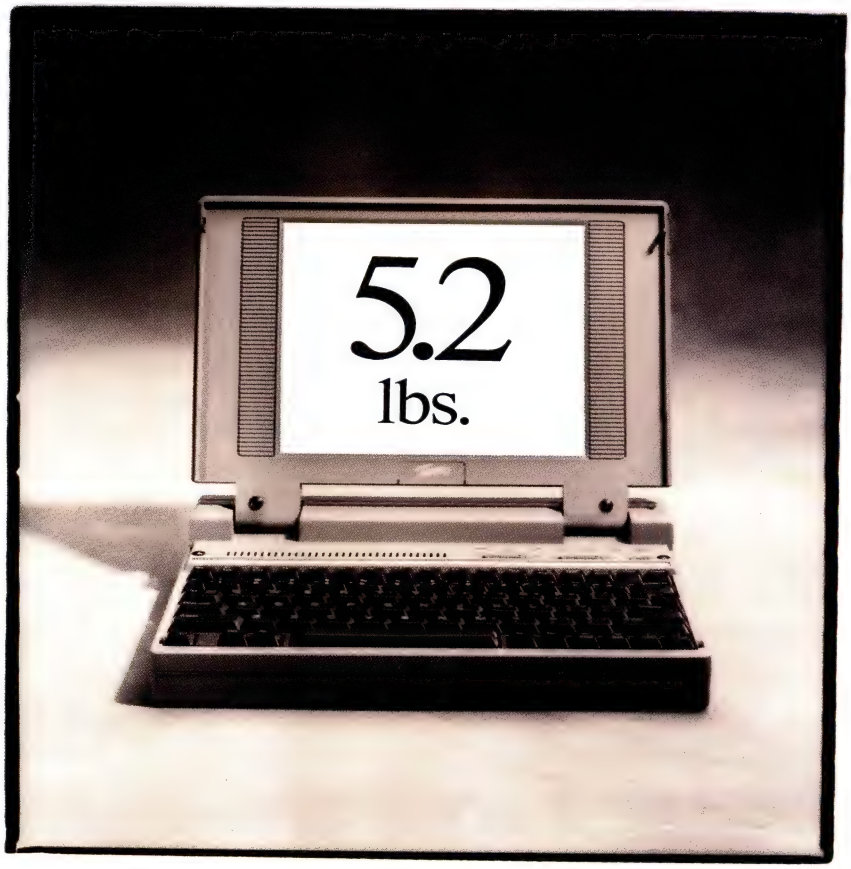

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Wrangling Over WordPerfect

Ultimate fantasies fulfilled, phantom fanatics, and programming potshots

Why WordPerfect's a Classic

Two features in your January issue were extremely informative and helpful. One was "WordPerfect for Windows: Rewriting a Classic" (page 174). I have always wondered what kind of hard work goes into creating a top-notch word processor. Following the program from the Code Complete stage to shipping was exciting. I would like to see more articles about the effort that goes into programming and debugging software packages.

The second feature I found interesting was the Phantom Shopper's "The PC Is in the Mail" (page 194). Anyone considering buying a PC should read this straightforward article.

I've read many computer magazines during the last eight years, and I'm happy to see a magazine taking an informative and exciting approach to writing. My subscription order is in the mail.

CHARLY CALDWELL II
HOWELL, MICHIGAN

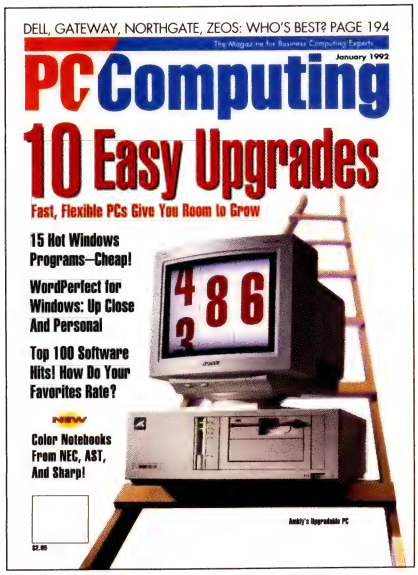
Beyond the fact that WordPerfect is a quality product, I'm convinced that the key to the program's extraordinary success is embodied in two words that you used in the opening paragraph to describe many users—*loyal family*.

Since my first free call to the technical support department, I have always felt that WordPerfect really believes that I am a member of its family and cares if its product works for me. Since I have learned to use it proficiently, I rarely have to call with questions. Nevertheless, WordPerfect's unlimited support is what I expect as a member of its family. WordPerfect has earned my phenomenal loyalty. Faced with the delayed arrival of WordPerfect for Windows, did any of the several attractive offers from competitors tempt me to jump to another package? Hardly—that's not the way I treat a family member.

JOSEPH R. THOMASSON
NO ADDRESS GIVEN

A Mercedes It Isn't

As a longtime WordPerfect user (since Version 3.0), I was delighted when the



Windows version finally shipped. But delight quickly became disappointment, glowing reviews notwithstanding.

The people at WordPerfect are still wedded to their own DOS printer drivers, which don't take advantage of the environment. WordPerfect gives inadequate support to type managers and the Windows ANSI character set.

All this, together with the assorted bugs that one expects in the first release of a new program, convinced me that this product is not even close to being ready for prime time. I returned the software to my dealer and upgraded to Word for Windows Version 2.0 instead. It was like stepping from a Yugo into a Mercedes. Version 2.0 is truly elegant—fast, seamless, and very friendly.

JOAB S. HERMAN
BOSTON, MASSACHUSETTS

A Bargain Hunter's Delight

I must confess that I am one of those people who orders the free issue and writes "Cancel" on the invoice. But after reading the January issue and saving $300 by investing in the Fastback Plus instead of a tape backup system (New!, page 74), maintaining my sanity by not ordering a 1991 income tax package until the final editions are released (Consumer's Edge Tip of the Month, page 292), and using your "save and save again" macro to simultaneously save documents to my hard drive and floppy disk (Help, page 247), I realized that *PC/Computing*'s subscription price is a bargain. I have enclosed my subscription card and look forward to future issues.

JUDITH K. MADNICK
ALBANY, NEW YORK

PC/Computing is my favorite magazine. It not only reviews the latest items on the market but also gives suggestions and hints on how to become a more powerful computer user.

THOMAS C. PEPERISSA
MOUNT LAUREL, NEW JERSEY

Not an hour has passed since I plucked the January issue of *PC/Computing* from my mailbox, and I am downloading

a number of shareware programs from "Windows Software for a Song" (page 163). This article gave me information that I haven't had the time to scour systems like CompuServe to find. You saved me time and money by providing the information I needed in one place.

RICHARD BELL
ALISO VIEJO, CALIFORNIA

The Ultimate Fulfillment

I look forward each month to the continuing saga of the ultimate computer. Like any fantasy, it is vicariously fulfilling. The January article ("The Ultimate Disk Cache," page 151), which compared software and hardware disk caches, was up to the usual level of excellence; but for those of us with earthbound systems and budgets, it would have been more valuable to describe the performance results for both caches configured with equal amounts of memory than for the 4MB used by PC-Kwik and the 16MB used by the caching controller. Keep up your good work helping readers dream about the cutting edge of computer technology.

SCOTT R. CHUDOW
MONROE, NEW YORK

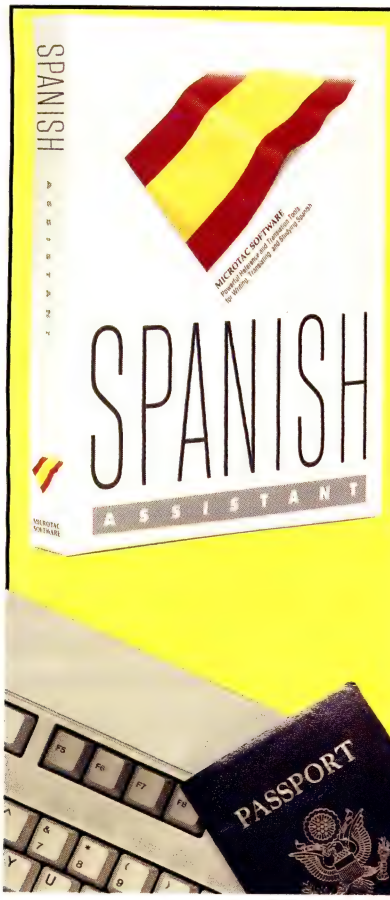
Most of the files used to test the various disk caches were less than 4MB, which means that the performance improvements you'd see for a caching controller compared with a software cache still hold true if all you can afford is a 4MB hardware cache. The real advantage of the larger cache comes into play when you are working with exceptionally large files, such as those generated by desktop publishing, graphics, or database programs. —*Ron White*

Phantom Foes and Fans

I'm not one to wax poetic, but I love my Northgate 386SX 16MHZ SlimLine. Unlike the Phantom Shopper ("The PC Is in the Mail," January, page 194), I didn't pay the shipping charges when I bought my SlimLine a year ago, the unit was less than the advertised price, and my credit card wasn't billed until the unit was shipped.

The biggest reason I recommend Northgate to everyone is the superb technical support. A few months ago, I decided to clean out my hard drive. I don't know what I did, but somehow I destroyed my AUTOEXEC.BAT, CONFIG.SYS, COMMAND.COM, HIMEM.SYS, and mouse driver files. I got a Northgate technician on the phone before total panic set in. He spent 40 minutes on the phone (on their nickel, I might add) rewriting the destroyed information with me. When he was done, my computer was working and my pride was intact.

SHARON GUMEROVE
BRONX, NEW YORK



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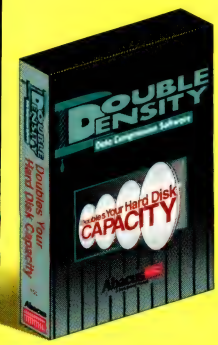

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Letters

As a purchasing manager, I'm always looking for publications that provide information about vendors and guidelines for making purchases. On a recent business trip, I picked up your December 1991 issue and thoroughly enjoyed it.

I took special interest in the Phantom Shopper column in Consumer's Edge ("The Hard Drive Is in the Mail—and It Works Like a Charm," page 362). Since I am considering buying an additional drive for my home PC, I found the play-by-play of the transaction with Hard Drives International very interesting reading.

I can assure you that I will contact HDI when I am ready to make personal and corporate purchases. It was a pleasure to find a magazine that looks out for its subscribers rather than just taking its advertisers' money and looking the other way.

Keep up the good work and keep the mail-order industry on its toes.

TIM DAY
ENFIELD, CONNECTICUT

To Program or Not?

About John C. Dvorak and Jim Seymour's January debate "Does a User Really Need to Know Programming to Get the Job Done?" (page 88): I agree with Jim that the vast majority of users have no need (or desire) to know how to write programs. They just want to get their jobs done. The computer is going through the same sort of change that the automobile went through. People no longer have to know mechanics to drive a car, and they don't have to know basic programming to use a computer.

SHELDON SMITH
APPLE VALLEY, MINNESOTA

A real user doesn't even need to know where the power switch is. No one need ever take the training wheels off a bicycle, either. But at some point, a person will become embarrassed. Plug and play is nice, but a program that has any real power is somewhat programmable. Learning programming is learning another language. What respect would you have for someone who is totally befuddled by *Sí, señor*? My point is not that everyone should be multilingual. I'm saying that if you think education is

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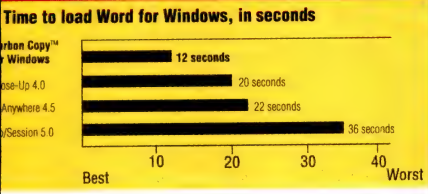

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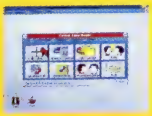

"Carbon Copy for Windows is the closest thing to having remote control built into Windows itself." *Windows Magazine*

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expensive, try ignorance. I manage a few people who work on computers. I can confirm that a user with just a taste of programming will always outperform one without.

ROY KNAPP
COLUMBIA, MISSOURI

PC-Write Has a Thesaurus

An October 1991 review of Quicksoft's new word processor, PC-Write Standard Level 2.0 (New! page 66), stated that although a thesaurus was promised, none was implemented in the program. On the contrary, Quicksoft includes Roget's Thesaurus by Houghton Mifflin.

LEO NIKORA
PRESIDENT, QUICKSOFT
SEATTLE, WASHINGTON

PC-Draft-CAD Capabilities

While we were honored that you chose PC-Draft-CAD to review in your February coverage of 2-D CAD programs (Working Smarter, page 312), the article contains several inaccuracies that give a negative impression of our product.

These are inaccurate statements:

"PC-Draft-CAD is not the best program for drawing floor plans. There's no way to break a line to insert a window or door."

"If you guess wrong [about the size for text], you've got to erase it and start over."

". . . It's difficult to delete something you drew a while ago."

"There's no way to change something without deleting it and starting over."

"There's no way to pick an object with the cursor or draw a window around something you want to erase."

All of these commands are well documented in the user manual and the tutorial shows how to use them.

MICHAEL ALLEN
NATURAL SOFTWARE
ST. CHARLES, ILLINOIS

Mr. Allen is right. It is possible within PC-Draft-CAD to alter individual elements of a drawing, including text, even elements drawn a while ago. And the program does include most of the standard drafting commands for changing or manipulating objects. We erred in reporting that the program lacked those capabilities.

However, we stand by our statement that PC-Draft-CAD requires much more effort to use than other programs. To select an element, for instance, the program requires that you place your cursor near the element and press F7 (Elements), R (SeaRch). Other programs allow you to click on an object or draw a window around it to select it.

As always, we'll let our readers be the final judge. We will make PC-Draft-CAD, a shareware program, available on PC/Contact, PC/Computing*'s CompuServe forum, so you can download and test it yourself. Look for PCCAD1.EXE, PCCAD2.EXE, and PCCAD3.EXE in data library 3 (Utilities/Misc.). We'll also upload Draft Choice 1.51g, another shareware 2-D CAD program reviewed in the February Working Smarter (we reviewed Version 1.51e). Look for DFTCHO.EXE, also in data library 3. Both programs are also available from Public Brand Software (800-426-3475); PC-Draft-CAD is disk number CD 32.1, Draft Choice is CD 33.1. —Jan Smith*

Corrections

The publisher of Professional Write was incorrectly identified on page 142 in the January feature, "The *PC/C* Top 100: The Year's Best-Selling Software." Software Publishing Corporation is the program's publisher.

Harvard Graphics for Windows does include a clip-art library, contrary to information provided in the chart in the February feature "The Presentation Challenge" (page 109). Harvard Graphics' Symbol Library includes 500 pieces of art.

We listed an old address for Progressive Solutions, which sells a DOS task-swapping utility, Back & Forth Professional, in the February Help section (page 266). The company's correct address is Box 276125, San Antonio, TX 78227-6125.

Mail your thoughts to Letters, PC/Computing, *950 Tower Lane, 20th Floor, Foster City, CA 94404; fax us at (415) 578-7029; or contact us via MCI Mail at PCCOMPUTING or via PC/Contact, our online forum. Letters must be signed and must include a daytime phone number. All letters become the property of* PC/Computing *and will be edited for length and clarity.*

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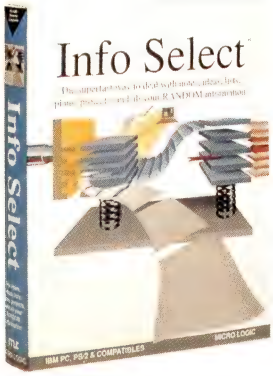

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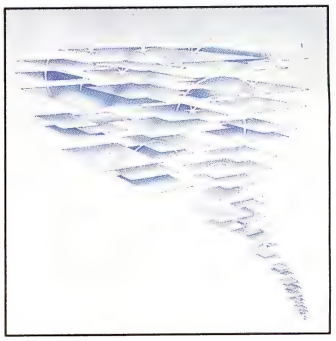

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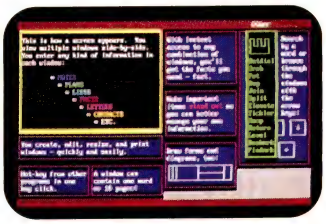

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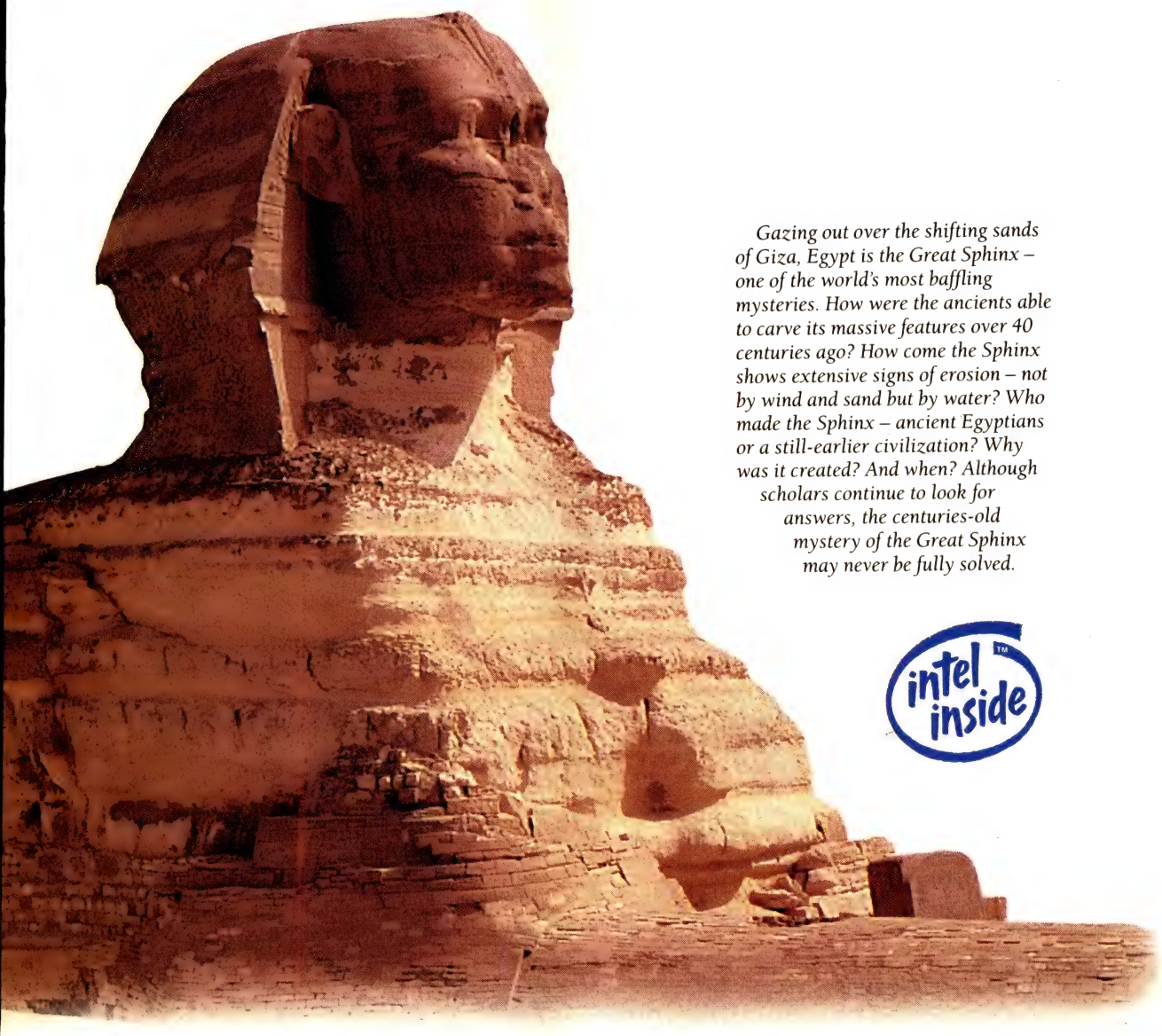

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Windows 3.1 Is Chock-Full of Fixes

WITH WINDOWS 3.1, MICROSOFT has addressed user complaints and suggestions, implementing a flurry of subtle fixes and improvements but few visible changes. In the past year, Microsoft has consistently released new versions of its products to improve those often-nebulous qualities of ease-of-use and efficiency. The changes in Windows 3.1 might not be immediately apparent, but they're effective.

First, what you can see: The File Manager is much more efficient than before. Whereas you might have looked elsewhere for a file management tool for Version 3.0, you now need look no further than Version 3.1. By default, File Manager displays two windows: a tree view of your directory structure and a list of the files in the highlighted subdirectory. File Manager also supports new drag-and-drop features that let you drag a file onto the Print Manager icon so Windows can load the application associated with the file and print from within the application. This means you aren't limited to printing simple text files—any file whose parent application can be run by double-clicking on the file's icon can be printed from within the File Manager.

Another visible difference in Windows 3.1 is the inclusion of True Type scalable fonts. This feature is conceptually similar to Adobe's ATM for Windows. With True Type, you can scale fonts in a variety of point sizes that will display onscreen and on the printer. ATM and True Type will coexist in your PC if you have typeface outlines in both the PostScript Type 1 and True Type formats. Windows 3.1 will ship with a basic group of outlines: versions of Times-Roman, Helvetica, Courier, and Symbol, as well as a few decorative faces. You will be able to purchase additional True Type outlines from a number of type houses, including Bitstream and Monotype.

Other changes you'll see right away include the special StartUp group within the Program Manager. This feature functions like any other program group, with one exception: Any program icon that you drag or copy into the StartUp group will automatically launch when you start Windows. That means no more fussing with the LOAD= and RUN= lines in the WIN.INI file. You can also assign hotkeys to each program in the Program Manager so that you can launch applications or switch between them quickly.

When you install it, Windows 3.1 recognizes if you have another version of Windows on your computer, and it will preserve program groups, window locations, and other options if it detects them. The installation routine is also much smarter in Version 3.1. For example, it recognizes eight of the most popular networking

One noticeable improvement in Windows 3.1 can be found in the File Manager, which is now more efficient. By default, it displays your directory structure and the files in the highlighted subdirectory.

PRINTER WORKS' BARGAIN LASER

The Printer Works' (800-225-6116) LX-29000 laser printer delivers PostScript for a song. Better still, you can play it on your PC and your Mac: The LX-29000 comes standard with an AppleTalk interface as well as parallel and serial ports. An auto-sensing feature switches between ports automatically, allowing a Mac and a PC to share the printer simultaneously.

In our tests, the LX-29000 produced crisp, highly consistent documents at speeds only slightly slower than its rated 4 pages per minute.

As a True Image printer, the LX-29000 emulates both PostScript and PCL 4 page-description languages. You switch between emulations either through dip switches or software. The printer comes with 35 resident True Type fonts.

Unfortunately, the LX-29000 comes with only 2MB of RAM. Still, at $1,295, it's a bargain.

MARTY JEROME

programs and automatically installs the appropriate files for the appropriate network.

Windows 3.1 is faster than before. Even the beta version we used has more snap than earlier versions. Contributing to the increase in speed are a new, smarter version of SmartDrive and a feature that bypasses certain disk controllers for high-speed data transfer between the disk and CPU.

The other major improvements to performance and reliability are structural and were made to reduce problems with system resources. Microsoft has devoted more space to system resources so that you can run more applications, more reliably. Because lack of system resources often leads to the infamous Unrecoverable Application Errors (UAEs), more system resources translates directly into improved reliability. And speaking of UAEs, they aren't called that in the new version. Windows 3.1's error messages are more informative, and internal changes to the code mean that you should see error messages less often.

Support for DOS applications is also improved. Windows 3.1 can reboot any application without disturbing others. While this isn't foolproof, you can usually recover from errors without rebooting your system and starting over. DOS users will also appreciate the ability to change fonts while working with a DOS application in a window. When you choose between the several font options you're presented with, preview boxes show you both what the DOS application's text will look like in the new font and how large the resulting DOS window would be if you chose that particular font.

Windows 3.1 is a must-have upgrade for any serious user. Upgrade pricing and details were not set at press time, but Windows 3.1 was expected to ship late in the first quarter of 1992. See our May issue for an in-depth look at the new Windows. DALE LEWALLEN

EXOS LAN IN A RED CAN

The Exos product division of Microdyne (800-255-3967) offers a unique twist for the starter network market: LAN-in-a-Can, which packages three 10BASE-T Ethernet controllers, an 8-port concentrator, and 150 feet of cable in a red metal can. For $1,095 you get all the hardware you need to set up a three-station network. Microdyne also sells a three-node version of NetWare Lite for $297.

The model 105-10T 10BASE-T Ethernet controller has an installation and support disk with diagnostic software and drivers for many networks. We tested a LAN-in-a-Can setup with a demo version of NetWare Lite and it worked smoothly and quickly. Installation took less than 30 minutes.

The only question is what do you do with the can? PAUL FERRILL

Clock-Doubled Machines Achieve 50MHz Speeds at Great Prices

SPEED DEMONS PUSHING the limits of processor power can look forward to several machines that use Intel's technology to double the 486 CPU's internal clock speed. Compaq and Tandy have already introduced machines based on speed-doubled 25MHz 486DXs. Both machines come with Intel's 50MHz 486DX2 CPU, and both process data 30 to 70 percent faster than a regular 25MHz 486DX.

In our tests, both the Compaq Deskpro 50M and the Tandy 4850 EP blazed through normal processing chores 98 to 104 percent faster than their 25MHz 486SX siblings. Of course, I/O and hard disk bottlenecks keep real-world system performance well below the speeds of a full-blown 50MHz 486. Processor-intensive applications, such as CAD and spreadsheets, will speed up immensely. Disk-intensive applications, such as databases, and programs with heavy I/O traffic will see less improvement, however.

As its name implies, the Speed Doubler processor doubles the clock signal it receives from the system so that on-chip subunits of the CPU run twice as fast as normal. The 486's 8K cache holds processed information where (*continued on page 38*)

Tandy's 4850 EP (top) and Compaq's Deskpro 50M use a clock-doubled Intel chip to process data at a fast 50MHz.

PHOTOGRAPHS BY FRED STIMSON

CRYSTAL BALL FOR WINDOWS

Excel add-ins have been few and far between, but Decisioneering (800-289-2550) hopes to capitalize on the shortage. Crystal Ball for Windows is the software publisher's Macintosh-based Excel forecasting and risk-analysis tool ported to Windows.

Similar in concept to 1-2-3 add-ins @Risk and Delta Manager, Crystal Ball requires no programming language, special commands, or statistical training. You just tell Crystal Ball your assumptions and predictions. For example, you might make assumptions about inflation, product demand, competition, and supplies when you predict next year's sales. Crystal Ball returns a range of possible outcomes based on your model.

Keep in mind that all simulation tools have a limited scope of vision. If the underlying assumptions are poorly thought out, the forecast is like a paper bag full of water: It does the job only if you don't test it.

At $195, price is not a barrier. Crystal Ball leverages Windows unlike any DOS-based 1-2-3 add-in. If ease of use can predict success, Crystal Ball looks promising.

MICHAEL BURGARD

SPEED DOUBLERS *from page 37*

the CPU can retrieve it quickly.

The bottom line is bargain speed. Compaq's Deskpro 50M, an upgradable EISA design based on the company's basic Deskpro line, comes with a 120MB drive, 8MB of RAM, five expansion slots, and an enhanced video card capable of 1,024-by-768 resolution (previously, the graphics card in a Deskpro 50M could take you to 800-by-600 resolution). Though a price for Compaq's system wasn't available at press time, Compaq officials said the Deskpro 50M with the 486DX2 chip will cost roughly the same as the Deskpro 486/33M, which lists for $4,800 to $7,200.

Meanwhile, the Tandy 4850 EP promises to be priced at an astoundingly low $2,699. Although this price does not include a monitor, it does buy you a system with a 120MB hard drive, 4MB of RAM, and three expansion slots.

As expected, both machines showed impressive improvements in onscreen font generation and screen fills, though overall video performance was slight. And the Speed Doubler chip didn't help disk performance a jot. While the Compaq nosed ahead of the Tandy in processor tests, the hard drive on the Compaq lagged behind Tandy's.

Versions of the new chip for 33MHz 486 systems and for 486SX systems will appear by year's end, according to Intel. A doubler for the 50MHz 486 is in the works.

MARTY JEROME and SEBASTIAN RUPLEY

COMPAQ DESKPRO 50M
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Project for Windows 3.0 Helps You Track the Nitty-Gritty Details

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MICROSOFT'S PROJECT-management software, Project for Windows 3.0, is now easier and more flexible than ever.

The upgraded Project includes a nearly infinite number of ways to sort, organize, view, and print the details of your project—you simply choose the project details you want to see from a series of dialog boxes, arrange the elements on the screen, and set fonts and colors. You can even save custom views and add them to the Views menu.

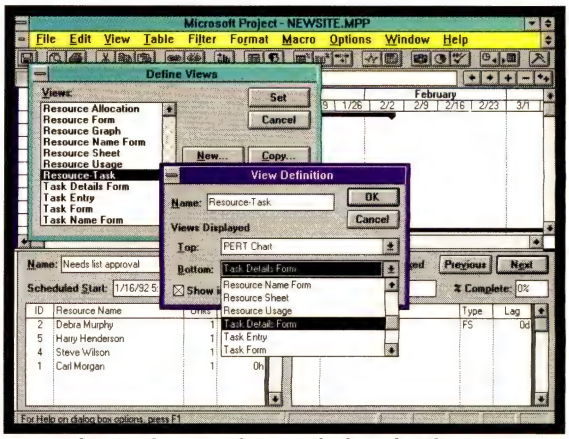
It's easy to keep your project up to date. A new toolbar includes buttons for frequently used commands, such as linking and unlinking tasks or expanding and contracting the time scale on a Gantt chart. If you don't like the toolbar configuration, you can move the buttons, change a button's icon, and attach macros to the buttons.

You can add, remove, or replace a resource to several tasks at once. When planning or updating a project, a button click moves you to the next overcommitted resource. Click on another button to print a copy of what's on your screen. Other new features include print preview, a fit-to-page print command, a spell-checker, and Planning Wizards—interactive macros for novices.

Dynamic data exchange and client/server object linking and embedding have been added to Project, and Microsoft includes sample macros for using these links for such tasks as bringing project information into a Word for Windows table and using Excel to apply inflation factors to cost data. (Our prerelease version did not fully implement these features.)

Overall, Project for Windows 3.0 makes it much easier to track the nitty-gritty details of project management.

JAN SMITH



Project for Windows 3.0 lets you look at details any way you like and check the status of overcommitted resources.

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ALDUS FREEHAND, already a star on the Mac, is looking for top billing on the PC as well. Version 3.0 for Windows combines a rich feature set, exceptional type handling, and strong cross-platform support to present a challenge to illustration and design packages such as CorelDraw and Micrografx Designer.

Aimed at graphic-design professionals, FreeHand 3.0 for Windows shares most of the features found in Version 3.1 for the Mac, though the lack of Wacom drawing tablet support is one of the few significant omissions.

FreeHand for Windows' basic interface and pasteboard screen metaphor are the same as on the Mac. Floating tool palettes (for tools, styles, colors, and layers) can be positioned and sized anywhere onscreen, providing an easily customizable work space. FreeHand's only shortcoming is that it doesn't have onscreen prompts to help you decipher the meaning of each tool icon.

Otherwise, the FreeHand interface will greatly appeal to design professionals. In particular, the 99 levels of undo and redo offer tremendous freedom to experiment with different design possibilities without damaging your original drawing.

FreeHand has all the precision drawing tools you would expect in a $595 professional illustration program. It offers precision to within one ten-thousandth of a PostScript point. Also, you can edit onscreen in full-color preview mode. The program will even reblend objects automatically when you edit them.

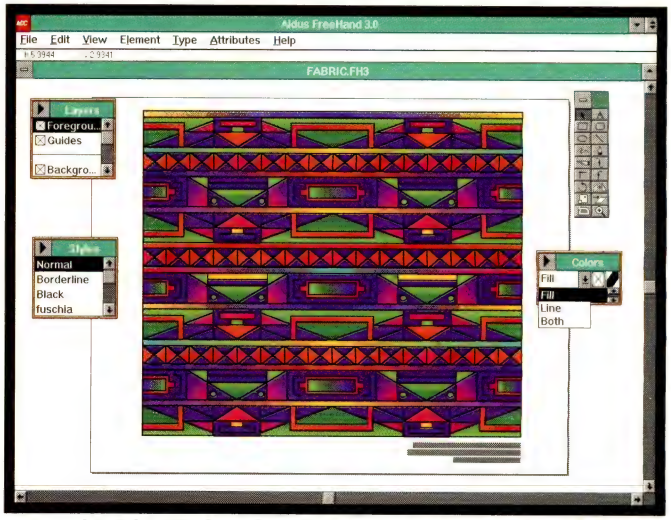
FreeHand's text-handling capabilities are powerful. You can enter text directly onto an illustration or along any path. You can even define whether you want to align text to an ellipse via the baseline, ascender, or descender.

Although the program doesn't ship with fonts, the precise typographic controls and ability to convert Type 1 fonts into editable outlines may be more appealing to some design professionals. FreeHand also has built-in special effects like zooming and shadowing, along with the ability to greek type.

FreeHand has good color and monochrome output support, including the ability to handle color separations, spot-to-process conversions, and support for the Open Prepress Interface standard. You can import and export most leading file formats, and, not surprisingly, FreeHand is compatible with other Aldus products for both the PC and the Mac.

One surprise about Freehand for Windows is its speed, and you can tailor the Preference options to make it even faster. This performance, along with its flexibility, precision, and rich feature set, give FreeHand 3.0 for Windows credentials that should appeal to any serious designer.

JON PEPPER



FreeHand 3.0 for Windows has 99 levels of undo and redo, and floating tool palettes that can be sized and positioned anywhere onscreen.

BATTERY LIFE AND VALUE

Micro Express (800-989-9900), a company that continues to produce low-priced notebook computers, has done it again: The new NB913 offers 20MHz 386SX power for $1,999.

The VGA display is grainy, but the system's two batteries provided more than three hours of life in our tests (Micro Express claims five hours), and the system performed well on speed tests. The NB913 notebook comes with 2MB of RAM (expandable to 8MB in $200 2MB increments) and an 80MB hard disk. Useful LEDs are included on the dashboard, and the NB913 comes with a 30-day money-back guarantee.

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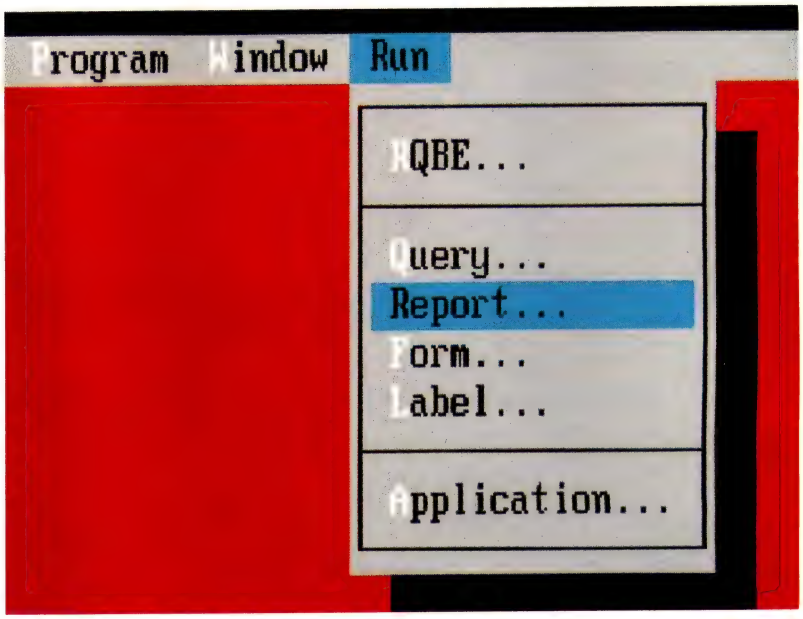

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FOX SOFTWARE

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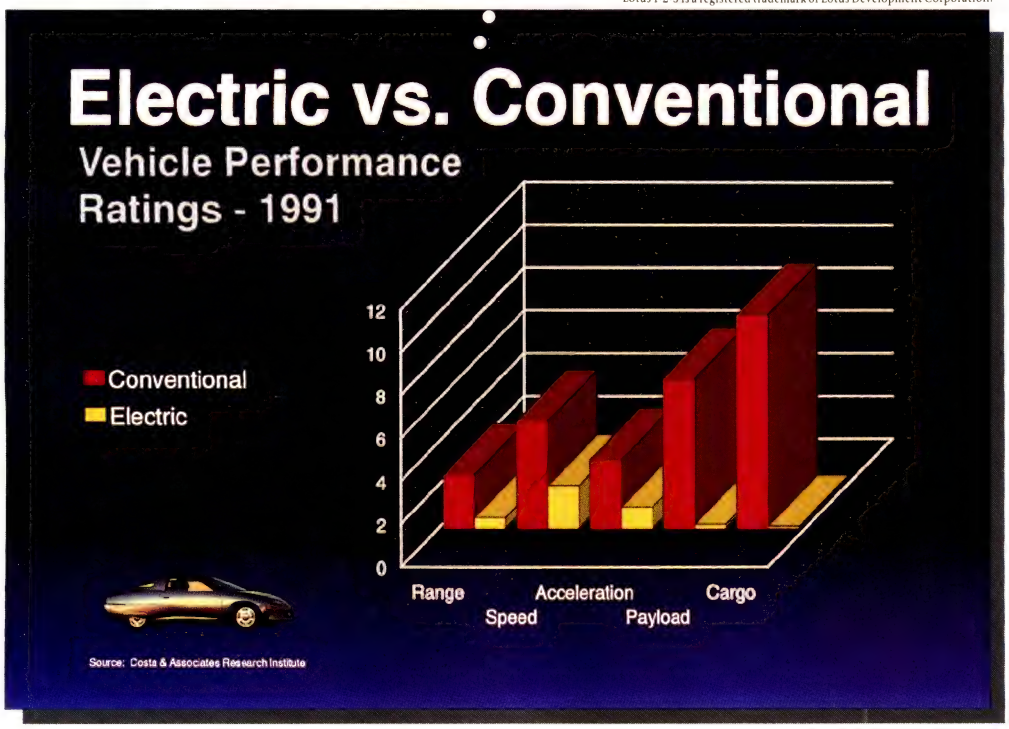
Circle 164 on reader service card.

How to change out-of



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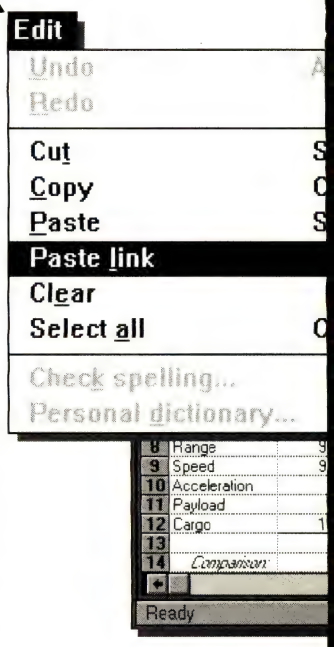

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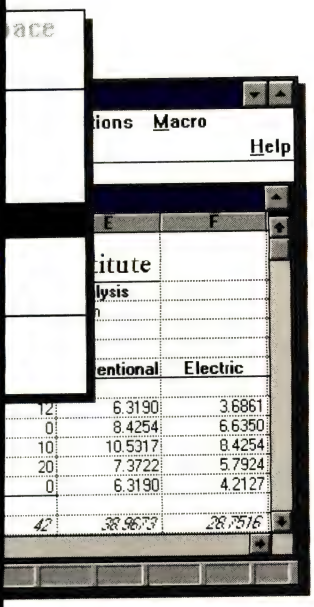

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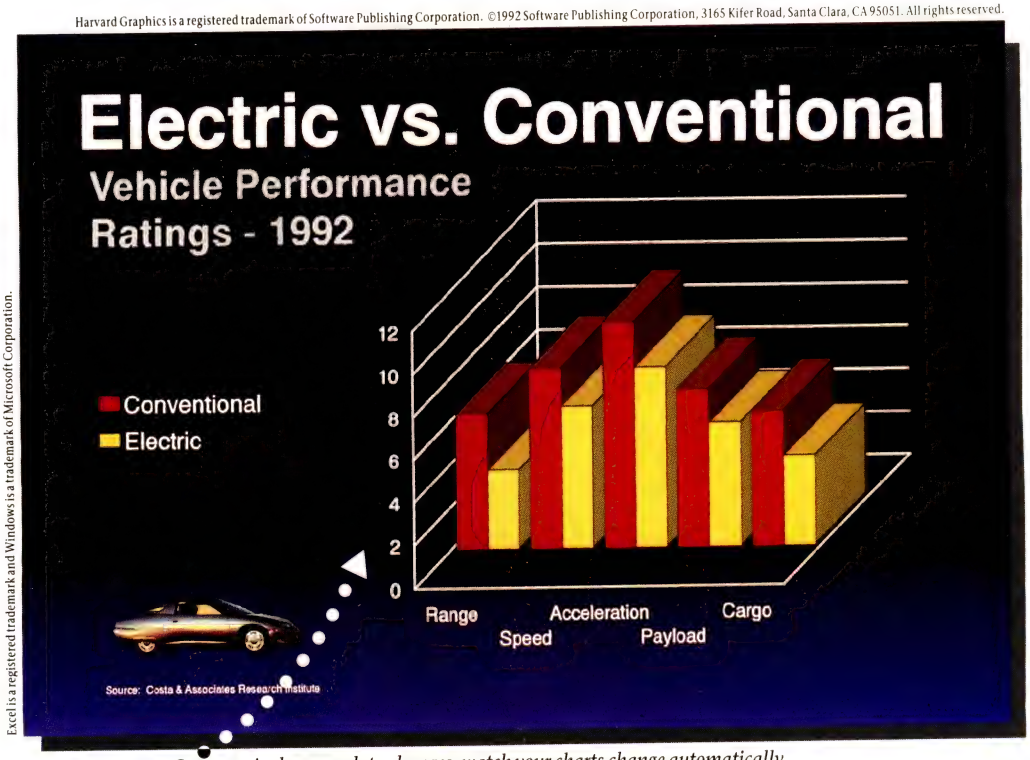

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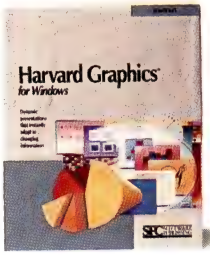

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Harvard Graphics for Windows demo disk.

Coming Soon to the Center Ring: All-in-One Software Packages

INTEGRATED SOFTWARE HAS ALWAYS BEEN A CURIOSITY. Ever since the first desktop computer appeared in 1975, we've wanted to pick and choose our favorite applications and find our own ways to integrate them. The utilities business, with file-conversion software and add-ins, boomed as we found our own ways to make a WordPerfect file work with a desktop presentation program.

So what if everyone in the company uses Lotus and you use SuperCalc? If someone needs a copy of your data, there are ways to transfer it. The same holds true for databases. Why should everyone use the same program if the data can be transferred? Standardization imposed within the corporation is never enforced, and most employees with any moxie use the personal software they want to use. (I'm reminded of an amusing promotional tape once sent out by Microsoft showing employees skulking around an office after hours so they could use Excel without getting caught.)

Historically, the most famous integrated software package is Lotus 1-2-3, sold as a combination database, spreadsheet, and graphics package. It was initially just a good spreadsheet with a mediocre database and a crummy graphics package incorporated. Other, more elaborate integrated systems appeared, and it soon became apparent (after they failed one by one) that people didn't really want grandiose all-in-one packages.

At about the same time, though, a curious low-end integrated system appeared called AppleWorks. It was for the Apple II and was a runaway best-seller. Bill Gates publicly theorized that the more rudimentary the applications were, the more likely an integrated package was to be accepted by the user.

Soon, the derivative Microsoft Works appeared on the scene, and a slew of low-end integrated packages quickly followed. Attempts at high-end integration, with high functionality like that in Symphony, proved Gates right. Advanced users, it turned out, are adept at finding ways to integrate their favorite programs themselves, usually with utilities. People have a favorite word processor and a favorite spreadsheet and a favorite page-layout program. Seldom are these programs published by the same software vendor. Actually, they never are!

It was obvious to operating system designers that this integration had to be handled by the operating system. Future versions of Windows, OS/2, and even Apple's System 7, for example, will be designed to handle interapplication integration. Each software package becomes a cog in a giant wheel—a module of a custom system put together by the user. The user can work with a variety of packages without worrying about integration or interapplication data exchange. This is the theory.

In fact, however, the concept is collapsing. Vendors of high-end applications are adding unrelated functionality and unnecessary complexity for no reason other than marketing punch. Worse, users are flocking to this stuff like lemmings. Almost all the word processor manufacturers, for example, are trying to make their systems into page-layout programs. Some even incorporate graphics capabilities.

Within the next few years, we will see a reemergence of the high-end integrated software system. The phenomenon makes the software business look like a sideshow.

"You have to see it to believe it! For our next act we do even more! Yes, ladies and gentlemen, we've done the impossible! Not just word processing, but graphics and file conversion and database capabilities and even a built-in paint program. Yes sir, all this for the same price as the other plain word processors."

It's no coincidence that the demonstrations at Comdex by companies such as WordPerfect resemble sideshows. They *are* sideshows.

Unfortunately, a company with a stable and popular word processing system such as WordPerfect is forced to follow this trend by companies such as Microsoft and others that offer flashy additional features. "Yes, ladies and gentlemen, features not found in WordPerfect!" It becomes a features game. The result is unnecessary functionality. What extra functionality could a word processor legitimately appropriate? Page layout and graphics are two that come to mind. I recall a word processor that incorporated a mini-spreadsheet, too.

"Look folks, you can add and subtract numbers right here in the middle of a letter to the boss. FAN-TAS-TIC!" None of these functions will be as good as any dedicated software package, but the manufacturers have to add them before the competition beats them to it. When you play the features game, you play it to the death.

The best integration scheme lets the operating system do the work.

This whiz-bang, Swiss-army-knife, do-everything approach to software design is just plain wrong. Excess functionality usually results in software that is hard to use. If it's not hard to use, then the fancier aspects of the software are never used or understood and are thus a waste of code.

The jigsaw-puzzle approach to integration with the operating system doing all the work is the right idea, but it doesn't look like it will fly. Its sane sales pitch will never be heard over the din of the sideshows. Get used to it. ◪

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AutoCAD Takes a Giant Step Toward Windows Capability

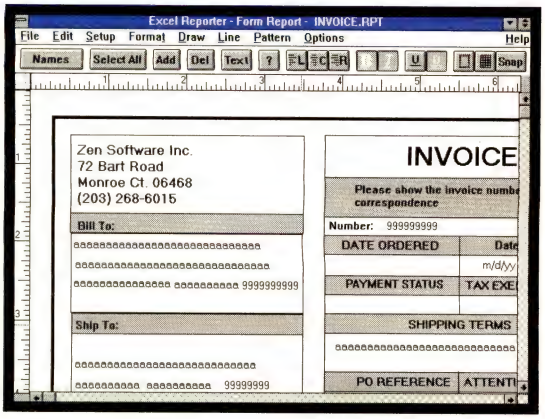
SPIFF UP WITH EXCEL REPORTER

Anyone using Microsoft Excel as a database needs Excel Reporter by Zen Software (203-268-6015). For $199, you get a standalone Windows program that turns out professional-looking reports.

Excel Reporter's ease of use doesn't mean it lacks high-end features. Sorting, subtotals, field ordering, calculations, and record-selection attributes are all there. Using a laser printer, you can polish your reports with borders, shading, and fonts.

Besides creating clear and quick reports, Excel Reporter produces mailing labels and forms. Dedicated Excel users will want this program in their bag of tricks.

▼ **MICHAEL BURGARD**



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AUTODESK HAS COME up with the first Windows-capable version of a heavyweight CAD package, and it's a welcome entry. The company chose to make AutoCAD for Windows as compatible as possible with the DOS version while adding features that take advantage of a Windows interface. As Autodesk's first attempt at grafting the Windows interface onto AutoCAD, the new AutoCAD for Windows Extension package has some rough edges but enough innovation to satisfy power users.

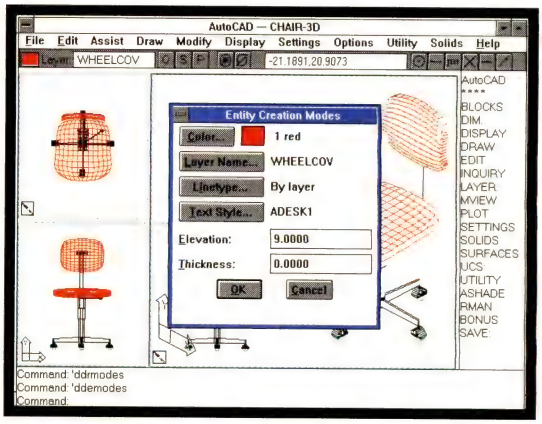
Compatibility

AutoCAD for Windows maintains compatibility with the many third-party applications for the DOS package. All of the drawing and editing commands from AutoCAD for DOS are included, and all existing script files, macros, and AutoLISP programs work. AutoCAD Development System (ADS) C-language programs need to be recompiled, though. The good news is that it's now cheaper to write C programs for AutoCAD. Previously, the software tools for ADS programming cost $1,900, but AutoCAD for Windows supports Borland C++, Microsoft C, and Quick C for Windows and costs only $125. Or you can write programs in Microsoft Visual Basic and link them to AutoCAD via dynamic data exchange (DDE).

For the first time, AutoCAD lets you create macros on the fly, using the new toolbar. Built-in DDE routines let AutoCAD for Windows exchange data with Microsoft Excel spreadsheets or other applications that support DDE. A demo file included with the extension outlines a shaft design: Change a dimension of the design with AutoCAD and values in the spreadsheet are updated, or modify the spreadsheet and AutoCAD redraws the shaft. To make CAD more accessible, the entire 660-page AutoCAD Reference Manual is available as a Windows help file.

Some Downsides

AutoCAD 386 users will find a few functions missing. The solids modelling add-on, Advanced Modelling Extension, won't be included until the 32-bit Windows/NT is released. Nor is object linking and embedding available.



AutoCAD for Windows, the first major CAD package to move to Windows, keeps most of its DOS features.

Speed will also be an issue: AutoCAD for Windows is much slower than the 386 version. Fortunately, the dual-use license lets you switch to AutoCAD 386 when speed is important.

Users of other Windows drawing programs will miss features they take for granted. Modeless editing, in which you simply pick an object to move or resize it, doesn't exist in the extension. You can only load one copy of AutoCAD and one drawing at a time; multiple document interface isn't implemented because AutoCAD's core code can't handle more than one drawing at a time.

Two Versions

Autodesk will release AutoCAD for Windows in two versions. The first, the Windows-capable extension, is available now for existing AutoCAD users. If you own Release 11, you can purchase the Windows extension for $99.

Later this year, Autodesk will release a standalone version of AutoCAD for Windows. At press time, the company had not decided on the price.

RALPH GRABOWSKI

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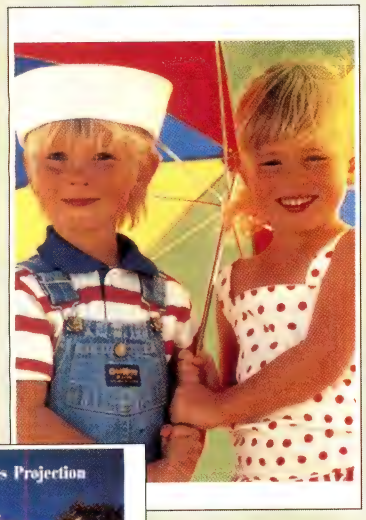

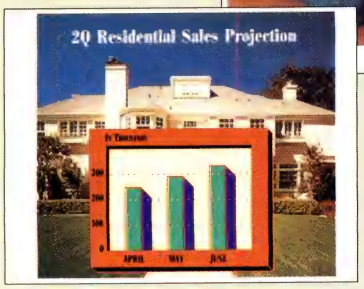

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Dell and AST Square Off with Powerful Low-End Notebooks

TIED FOR FIRST
The new notebooks from AST (left) and Dell make it tough to say which one is better. The Dell is lighter, but the AST has better battery life and offers more RAM expandability (8MB instead of 6MB). We prefer the AST's keyboard layout, but both notebooks' 32-grayscale VGA displays were less than perfect.

The two systems are very fast, faster at some ▼ tasks in our tests than even the Compaq LTE 386s and Toshiba 2200SXe—two venerable 20MHz 386SX machines. If you can make a few compromises—such as slightly inferior displays—these notebooks offer incredible performance for rock-bottom prices.

TAKING WINDOWS ON the road has generally been an expensive endeavor. But Dell and AST plan to change that with two new notebooks that scrimp on brilliant displays and other niceties but not on raw power. Both machines feature 20MHz 386SX processors, 2MB of RAM, and fast 40MB hard drives; both are being sold through electronic superstores (the Dell at CompUSA and Staples, the AST at Circuit City and Computer City); and both cost less than $2,000. (Prices are set by dealers, but the Dell has a list price of $1,899.)

Dell's NX20 introduces a third, low-cost model to the company's successful SX notebook family. Weighing in at 6.9 pounds, it is nearly a half-pound heftier than the 320N and 320N+, but it measures the same trim 8.3 by 11 by 2 inches.

The NX20 does make some trade-offs. With power-management features turned off, its NiCad batteries delivered a paltry 2 hours and 13 minutes of charge in our tests. Its 32-grayscale edgelit display measures only 8.5 inches and lacks the brightness and clarity of Acer's AnyWare or the Compaq's LTE 386s (though it does compare with Dell's 320N model). You also give up such conveniences as inverted-T cursor controls, the ability to change batteries without powering down, onsite service, and other features.

But the essence of a Windows machine is firmly in place. Besides having a full complement of ports (including VGA, serial, parallel, mouse, keypad, and external drive ports and a slot for a fax or modem), the NX20 lets users install up to 6MB of RAM and even add a math chip. An optional 60MB hard drive is available. And the notebook's performance in both CPU and hard disk chores was outstanding. The NX20 not only outstripped Dell's 320N but it leapt ahead of such speed demons as the Compaq LTE 386s and the Toshiba 2200SXe.

So did AST's Advantage NB-SX20, an entry-level peer to the company's hot-selling Premium Exec 386SX-20. In fact, the NB-SX20 so closely matches the Dell NX20 in features and performance that it's tough to decide which is better.

Like the Dell, the NB-SX20 comes with a slightly murky, 8.5-inch, 32-grayscale edgelit display, a full complement of ports, and easily upgradable memory (up to 8MB). With power-management features turned off, the NB-SX20 delivered 2 hours and 19 minutes of battery life in our tests—6 minutes more charge than the NX20. Unlike the Dell, the AST weighs a portly 7.3 pounds and comes in a slightly larger form factor (9 by 11 by 2 inches). It has the same case as the Premium Exec notebooks.

The NB-SX20's keyboard layout is far superior to the Dell NX20's because it includes not only inverted-T cursor controls but also independent Page Up and Page Down buttons. Unfortunately, the keys have a very short throw, and the clatter they make will draw menacing glares from airplane passengers. Also, the function key combinations aren't labeled; you have to memorize them.

Otherwise, the NB-SX20 offers a slightly richer set of features. With its power-management utilities operational, the AST squeezed out 3 hours and 13 minutes of battery life in our tests, compared with 2 hours and 49 minutes for the Dell. Also, the AST notebook includes a 2,400-bps modem as well as MTEZ software, SideKick, DOS 5.0, and Prodigy's communications program. While individual dealers will set prices for the NB-SX20, it will likely run nose to nose with the Dell.

Which machine is better? The decision comes down to personal preference. Neither notebook will steer you wrong. Both are available at retail outlets, so a visit will help you decide for yourself and determine how much less than $2,000 you'll actually have to pay.

MARTY JEROME

ADVANTAGE NB-SX20, PRICE SET BY DEALER
AST COMPUTERS, 16215 ALTON PKWY.
IRVINE, CA 92718; (800) 876-4278

DELL NX20, $1,899
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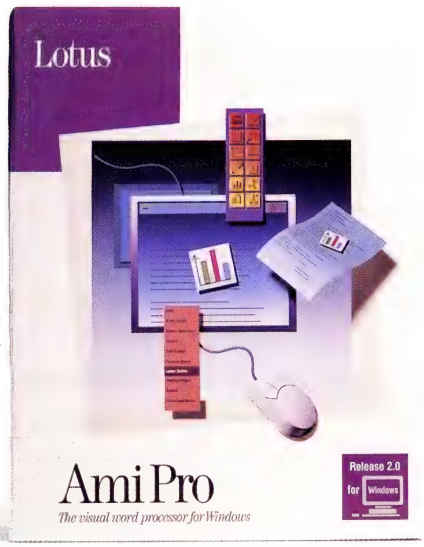
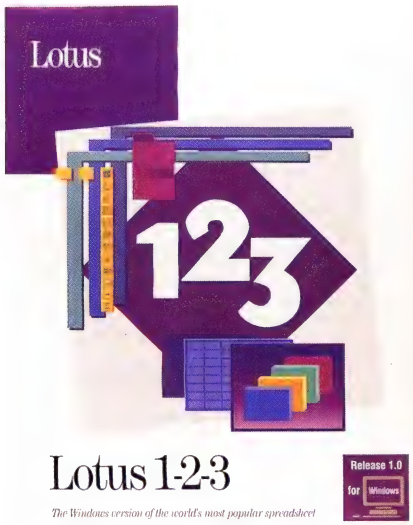
This is where ZEOS has performed something akin to magic. We call it our SpaceSaver case. Complete with *seven* drive bays (six with the DX-50), this incredible case is actually smaller than many cases offering only five drive bays. Plus, we've also added a *second whisper quiet cooling fan.* Why? Because the cooler a system runs the longer it will last. Now





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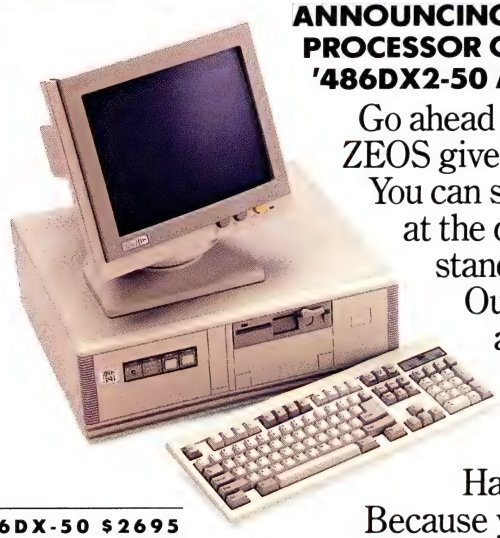
- Both the Teac® 1.2MB *and* 1.44MB floppy drives.
- Diamond SpeedStar Hi-Color VGA card/1MB RAM & Sierra DAC.
- ZEOS 14" High Res VGA Mono Monitor with Tilt & Swivel Base.
- Lotus 1-2-3 for Windows, *plus* Ami Pro 2.0, *plus* Microsoft Windows and DOS 5.0, *plus* a genuine Microsoft mouse!

486DX-50	$2695
486DX2-50	$2495
486DX-33	$2295
486SX-25	$2195
486SX-20	$2095
386-33	$1895

PACKAGE #2



ANNOUNCING THREE HOT NEW PROCESSOR OPTIONS: '486SX-25, '486DX2-50 AND '486DX-50!

Go ahead and Pick your Power! ZEOS gives you all the options. You can start out by taking a look at the de facto desktop power standard, the 386DX-33. Our '386-33 workhorse is a great entry point for true desktop power computing. But if it's a '486 you're after. Hang on to your hat!

Because you're off to a fast start with a 486SX-20 or our brand new 486SX-25. The 486SX is like a 486DX without the built-in math coprocessor. It's the easiest way to own the '486. And for full blown 486*DX* power, why not opt for your

PC Magazine calls it "the ultimate-power desktop PC." What will you call your new *ZEOS '486 Editors' Choice* system? Probably the hottest computer you've ever owned! And that's just for starters.

Because never before has so much value been available for so little money. We call it *ZEOS Value.* Starting with the incomparable ZEOS 386-33 right up thru our two new 486-50s, ZEOS gives you more for your money than anyone else.

ZEOS-486-33 PC MAGAZINE EDITORS' CHOICE 2-11-92

ZEOS. Nine times Editors' Choice. Your Best Choice as Well!

486-25EISA PC MAGAZINE EDITORS' CHOICE 6-25-91

486-33EISA PC MAGAZINE EDITORS' CHOICE 4-16-91

Notebook 286 PC MAGAZINE EDITORS' CHOICE 3-12-91

386-33 PC MAGAZINE EDITORS' CHOICE 1-15-91

386SX-16 PC MAGAZINE EDITORS' CHOICE 1-30-90

386-20 PC MAGAZINE EDITORS' CHOICE 5-30-89

386-16 PC MAGAZINE EDITORS' CHOICE 5-30-89

386-16FS PC MAGAZINE EDITORS' CHOICE 2-28-89

First of all, our prices are great! You can get a ZEOS 386-33 upgradable for as little as $1,395. Or you can move right into a *complete 486DX2-50MHz for only $1,995.* Outrageous! And it's not just the price. It's all the extras we give you, too.

As an example, your new ZEOS Windows system comes complete with *Lotus 1-2-3 for Windows* and *Ami Pro 2.0 for Windows.* These are not trial copies or sample discs, they are full blown, fully documented production packages. And, with a suggested retail of over $1,000, even at "street prices" that's a *great* value. It's ZEOS value. After all, ZEOS sets the pace for innovation and value for you in the direct marketing channel. Here's another good example.

Upgradable.

You have probably heard about the importance of protecting your new computer investment with a surge suppressor. Well, your new ZEOS upgradable desktop system already has one. *Built into the power supply!* That's innovation, built in from ZEOS.

Your new ZEOS system really is unlike anything else you can buy. It's better. Whether it's performance, quality, compatibility, upgradability, expandability, reliability, safety or support—whatever it is that you look for in a system, ZEOS has it. Here's another innovation we introduced to the hardware industry.

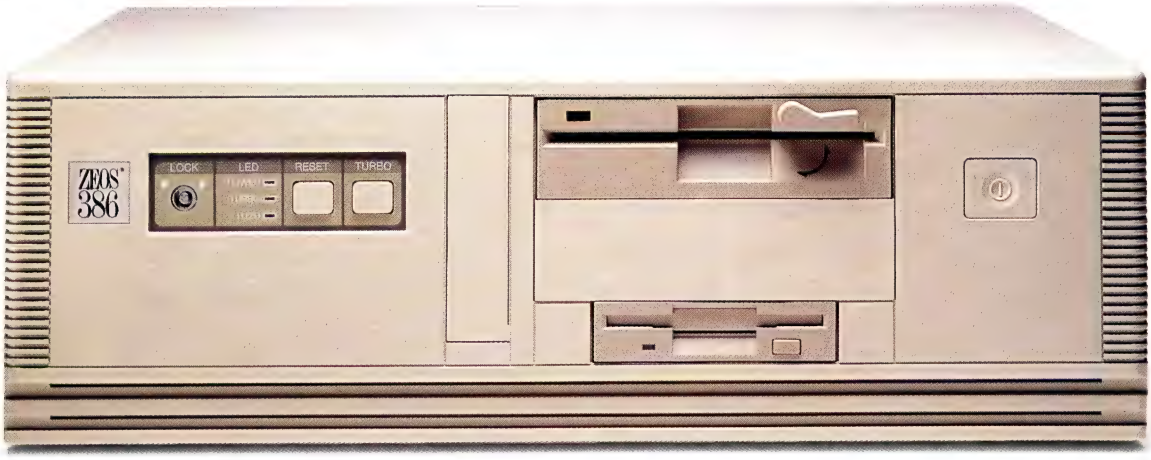
Zeos Windows systems include Lotus 1-2-3 for Windows plus Ami Pro 2.0 at no extra charge!

Low Cost.

Choose the *Editors' Choice* Upgradable. Now available as a 486-50!

24 Hour a Day Toll Free Technical Support. While most of the others still only offer part time technical support, as a ZEOS customer, you get around-the-clock 24 Hour a Day support, 365 days a year. Not that you'll need the help. But it's comforting to know if you do have a question, all you have to do is pick up the phone and give us a call, *anytime* of the day or night!

And all of this is just for starters. Because when you turn the page we're going to talk about a lot of other very exciting and important reasons for you to buy from ZEOS. Like 486SX-25s, the new 486DX2-50, your ZEOS *Editors' Choice '486* and more. A whole lot more. *Come on in!*



confidence in support, in your system and in the company as well. You can buy with confidence too because ZEOS is a strong and rapidly growing public company (NASDAQ NMS Symbol: ZEOS). In fact, *Fortune* magazine rated ZEOS as *America's Fastest Growing Company.*

Price, Performance. Quality and Support. There are *many* reasons to buy your new ZEOS system. All of them backed by your ZEOS Customer Satisfaction Package which includes our 30 Day Money Back Guarantee, One Full Year Limited Warranty and Express Parts Replacement Policy. How do you get one?

ORDERING IS EASY!

Ordering your new ZEOS system is indeed easy. Simply pick the

oaded!

Power and Package you want or let us custom build your new system to your exact specifications! Whatever you decide, a friendly and knowledgeable ZEOS Systems Consultant is waiting to assist you. And whatever you select, one thing is for certain.

Buying your new ZEOS system is perhaps the best purchase decision you'll ever make. So why not give us a call right now. You're going to be very satisfied. We don't just say it. We guarantee it! *Call Now Toll Free, 800-423-5891.*

486DX-50 $3195
486DX2-50 $2995
486DX-33 $2795
486SX-25 $2695
486SX-20 $2595
386-33 $2395

INCREDIBLE ZEOS PACKAGE #3

Add even more memory, a larger drive. And more Savings! You now receive:

- **4 full Megabytes of Ultra High Speed RAM.**
- **Our fast 130MB IDE hard drive with built in cache.**
- **Teac® 1.2 & 1.44MB FDD'S**
- **Diamond SpeedStar Hi-Color VGA card/1MB RAM (32,000+ colors)!**
- **ZEOS 14" 1024x768 Non interlaced VGA Color Monitor w/Tilt & Swivel.**
- **Lotus 1-2-3 for Windows, Ami Pro 2.0, Microsoft Windows, DOS 5.0 *plus* a Microsoft mouse!**

PACKAGE #3

486DX-50 $3695
486DX2-50 $3495
486DX-33 $3295
486SX-25 $3195
486SX-20 $3095
386-33 $2895

THE ULTIMATE ZEOS PACKAGE #4

Now, Memory goes to 8MB and the drive to 210MB. PC Magazine *Editors' Choice* as a 486DX-33 Vertical!

- **8 full Megabytes of High Speed RAM.**
- **Your screaming 210MB IDE hard drive with its own built-in cache.**
- **Teac® 1.2 & 1.44MB FDD'S**
- **Diamond SpeedStar Hi-Color VGA card/1MB RAM (32,000+ colors)!**
- **ZEOS 14" 1024x768 Non interlaced VGA Color Monitor w/Tilt & Swivel.**
- **Lotus 1-2-3 for Windows, Ami Pro 2.0, Microsoft Windows, DOS 5.0 *plus* a Microsoft mouse!**

PACKAGE #4

ORDER NOW TOLL FREE

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MasterCard, VISA, Discove Am Exp, Z-CARD, COD and Leasing Programs.
GSA00K91AGS5176
Open 24 Hours a Day, 365 Days a Year!

that's ZEOS Value. Speaking of which, here's another industry first you will definitely benefit from.

ZEOS ANNOUNCES: BUILT IN SURGE SUPPRESSION!

Right now, ZEOS is proud to announce that we've taken our top-of-the-line *300 watt* supply and added a *built in surge suppressor.* Building the surge suppressor right into the power supply increases reliability and helps protect your investment. We wonder how long it will take for the rest of the industry to catch up. And while ZEOS is giving you critically important features like these, we add yet another.

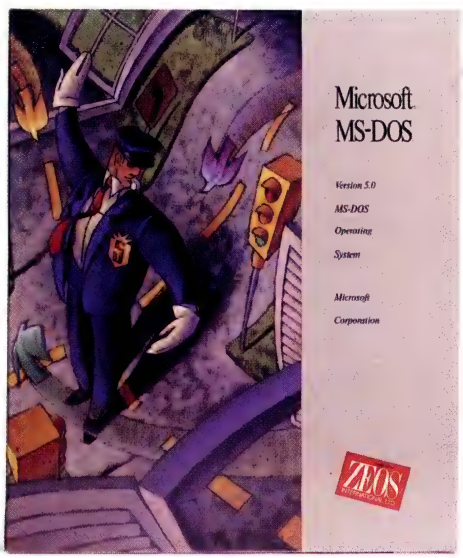
UL® Listing! As *PC Magazine* said, UL Listing is "one of the few forms of peace of mind you can buy." Every ZEOS system is Underwriters Laboratories Listed. This means your entire system (not just the power supply) has met the stringent safety requirements of Underwriters Laboratories. Not only that but your ZEOS UL® listing says a lot about quality too. UL safety listings are something many of our competitors simply don't (or can't) provide you. At ZEOS quality and safety are important to us. *You are important to us!*

24-HOUR A DAY TOLL FREE TECHNICAL SUPPORT.

The importance of having you as a customer shows in many other ways as well. For example, at ZEOS we believe supporting *you* should be more than a part time proposition. As *PC Magazine* said, "Insist on a good service and support package. Expect...24-hour seven-day-a-week support." We've been saying that for years. In fact, it was ZEOS that invented *24 Hour a Day Toll Free Sales and Technical Support.* Our customers tell us they love it. And you will too. Any time you need assistance a ZEOS technician is only a phone call away.

With ZEOS you can have complete

Great Prices. Lo



For a limited time only, in addition to Microsoft® DOS 5.0, Windows and a MS mouse, every ZEOS Windows System also includes Lotus 1-2-3 for Windows plus Ami Pro 2.0 plus Adobe Type Manager. No additional charge! You're going to love it!

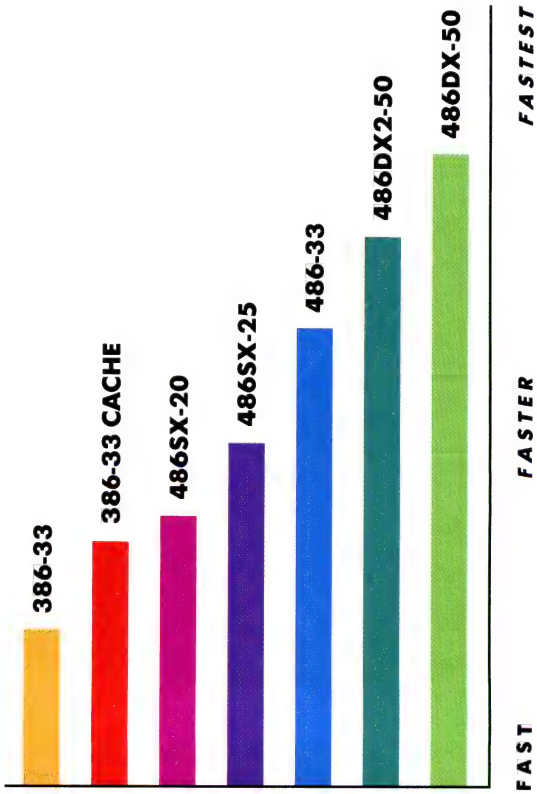
Pick Your Power!

Or Customize, Customize Customize! Just Tell Us and We'll Do It.

Now, ZEOS lets you pick exactly the power you want for the price you want to pay. Simply match the processor with the package configuration and you have your price. Or if you wish, we will custom build any system to your exact specifications.

And don't forget, with every ZEOS Windows System (packages 2, 3 and 4) you'll also receive Lotus *1-2-3 for Windows* plus Lotus' new word processor for Windows *Ami Pro 2.0.* The Lotus software alone carries a suggested retail of over $1,000 and even street prices are over $700. Yet we're giving it to you at *no additional charge!* That's ZEOS value.

No doubt about it. ZEOS has broken the price/performance barrier with these great new upgradables,



Z•SPEED GRAPHOMETER

Let the "Z-Graphometer" help you pick the processing power that's right for you. The comparisons are easy to make. Fast, Faster or Fastest!

ZEOS COMPLETE SYSTEM PACKAGE #1

- The Processor and Speed of your choice plus future upgradability!
- 1MB of High Speed RAM, expandable to a system total of 32MB right on the motherboard.
- 42MB High Speed IDE hard drive with its own cache.
- 1.2MB or 1.44MB Teac® floppy drive.
- ZEOS 14" flat screen Hi-Res amber monitor with Tilt/Swivel Base.
- Shadow RAM and EMS support for enhanced performance.
- ZEOS/RS 101 key SpaceSaver keyboard.
- Two Serial, one Parallel & one Game Port built right onto the motherboard.
- 7-16, 1-8 bit expansion slots. 80387 math co-processor support for '386 systems.
- Rugged ZEOS SpaceSaver case with twin cooling fans for added reliability and product life.
- Seven drive bays and our custom 300 Watt power supply with built-in surge suppressor!
- Includes ZEOS 24 Hour a Day Toll Free Technical Support and Customer Satisfaction package.

INCREDIBLE ZEOS PACKAGE #2

We take Package #1 and upgrade your ZEOS Modular System to include:

- 2 full Megabytes of Rip-roaring RAM.
- Our incredible 107MB IDE hard drive with its own built-in cache.
- Both the Teac® 1.2MB *and* 1.44MB floppy drives.
- Diamond SpeedStar Hi-Color VGA card/1MB RAM & Sierra DAC.
- ZEOS 14" High Res VGA Mono Monitor with Tilt & Swivel Base.
- Lotus 1-2-3 for Windows, *plus* Ami Pro 2.0, *plus* Microsoft Windows and DOS 5.0, *plus* a genuine Microsoft mouse!

and you're the beneficiary. Incredible power, upgradability, and free software. What more could there be? From ZEOS, lots more.

Because your new ZEOS system is not only fast, it's absolutely loaded with features. Like our 300 watt power supply with *built in surge suppression,* eight expansion slots, twin cooling fans for even more reliability plus our unique seven bay SpaceSaver case. And, every ZEOS system is UL® listed.

And don't forget you're also receiving 24 Hour a Day Toll Free Technical Support, our 30 day Absolute Satisfaction Money Back Guarantee, Express Parts Replacement and more. So go ahead.

Pick your Power, your Package, and your Price and give us a call. Your friendly, expert ZEOS Systems Consultant is ready to answer any questions you may have. *Call Now Toll Free 800-423-5891.*

PACKAGES 2, 3 AND 4 INCLUDE LOTUS BUNDLE!

	Pkg. #1	Pkg. #2	Pkg. #3	Pkg. #4
386-33	$1395	$1895	$2395	$2895
486SX-20	$1595	$2095	$2595	$3095
486SX-25	$1695	$2195	$2695	$3195
486DX-33	$1795	$2295	$2795	$3295
486DX2-50	$1995	$2495	$2995	$3495
486DX-50	$2195	$2695	$3195	$3695

Add $200 to any price for a 128K cache. 486DX-50 SpaceSaver case has 6 bays.

PICK YOUR PAYMENT OPTION TOO:

When you buy from ZEOS you have a wide variety of payment options. We accept MasterCard, VISA, American Express and Discover cards, or if you wish we can ship COD.

We also have our own ZEOS credit card, the "Z-Card." The Z-Card allows you to charge your ZEOS purchases just like a MasterCard or VISA. There is a low consumer rate and there is no annual fee. We can send you an application or you can apply right over the phone. Our special Toll Free application number is 800-421-8942.

ZEOS also offers a terrific leasing program for businesses. The rates are lower than those charged by most of the others in our industry. We will promptly mail or fax you an application on request. Just give us a call at 800-423-5891.

Purchase Orders from Fortune 1000 companies, governments and institutions are subject to credit approval. Wire transfer is also available. Please call 800-423-5891 for details.

INCREDIBLE ZEOS PACKAGE #3

Add even more memory, a larger drive. And more Savings! You now receive:

- **4 full Megabytes of Ultr High Speed RAM.**
- **Our fast 130MB IDE hard drive with built in cache.**
- **Teac® 1.2 & 1.44MB FDD'S**
- **Diamond SpeedStar Hi-Color VGA card/1MB RAM (32,000+ colors)!**
- **ZEOS 14" 1024x768 Non interlaced VGA Color Monitor w/Tilt & Swivel.**
- **Lotus 1-2-3 for Windows, Ami Pro 2.0, Microsoft Windows, DOS 5.0 *plus* a Microsoft mouse!**

THE ULTIMATE ZEOS PACKAGE #4

Now, Memory goes to 8M and the drive to 210MB. PC Magazine *Editors' Choi* as a 486DX-33 Vertical!

- **8 full Megabytes of Hig Speed RAM.**
- **Your screaming 210MB IDE hard drive with its own built-in cache.**
- **Teac® 1.2 & 1.44MB FDD'**
- **Diamond SpeedStar Hi-Color VGA card/1MB RAM (32,000+ colors)!**
- **ZEOS 14" 1024x768 Non interlaced VGA Color Monitor w/Tilt & Swivel.**
- **Lotus 1-2-3 for Windows, Ami Pro 2.0, Microsoft Windows, DOS 5.0 *plus* a Microsoft mouse!**

ORDER NOW TOLL FRE

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Open 24 Hours a Day, 365 Days a Year!

ZEOS® INTERNATIONAL LTD.

If you thought power like this was out of your budget, take another look. While many of the others don't even offer 50MHz power, you can own the new ZEOS 486DX2-50 starting *complete for as low as $1995!*

Starting at $1995, you can select from any of four money saving ZEOS System Packages. Or, if you wish, let us custom build your hot new 486-50 to your exact specifications.

ZEOS POWER GRID FOR THE 486DX2-50

Apply The "Zeos Power Grid" To Match Your 50MHz Needs: Add $200 for 128K cache. Prices shown are for Intel 486DX2-50 CPU, for 486DX-50 add $200.

	Intel 80486DX2-50MHz	Upgradable CPU	1MB High Speed RAM	2MB High Speed RAM	4MB High Speed RAM	8MB High Speed RAM	42MB HDD, Fast IDE	107MB HDD, Fast IDE	130MB HDD, Fast IDE	210MB HDD, Fast IDE	Teac 1.2 Floppy Drive	Teac 1.44 Floppy Drive	14" Hi Res TTL Monitor	14" VGA Mono Monitor	14" VGA Color 1024 x 768 NI	Monitor Tilt & Swivel	Hercules® Graphics Card	Hi-Color VGA Card, 1MB	Sierra DAC	Shadow RAM/EMS Support	ZEOS/RS 101 keyboard	2 serial, 1 parallel, 1 game port
Pkg. #1 Only $1995	■	■	■				■				■		■			■	■			■	■	■
Pkg. #2 Only $2495	■	■		■				■			■	■		■		■		■	■	■	■	■
Pkg. #3 Only $2995	■	■			■				■		■	■			■	■		■	■	■	■	■
Pkg. #4 Only $3495	■	■				■				■	■	■			■	■		■	■	■	■	■

WHAT SHOULD I GET?

How should you configure your new ZEOS 486-50? Of course the best answer depends on your needs and what you plan to use your new system for. But never before has so much power been available to everyone at such a low price. Our suggestion would be to consider investing in two areas when you buy your new 50MHz system. The memory and drives. Particularly the memory.

From what we're hearing, memory will be important with the new operating systems debuting later this year. We would strongly recommend at least 4 megabytes, eight if it's in the budget. As for drives, think in terms of 100+ megabytes, applications just don't seem to be shrinking (however, before you go too wild, remember you can always add more drives). Both of our Packages #3 and #4 incorporate these suggestions.

Certainly another option you may want to consider is our Vertical case. This heavy

Your 486

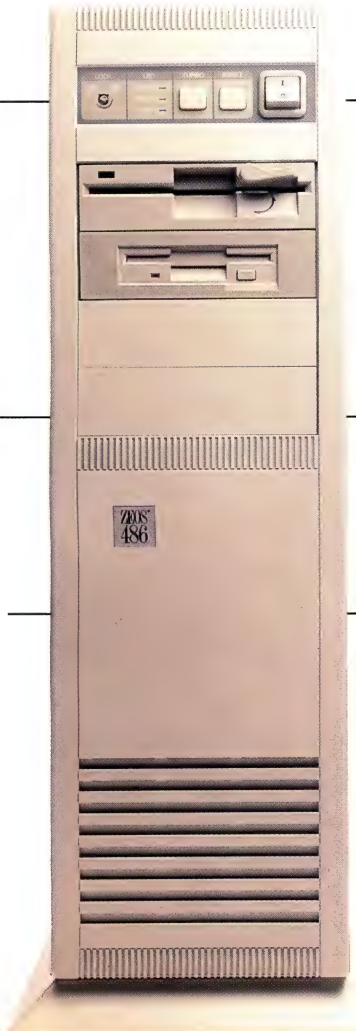
ZEOS Breaks the '486-

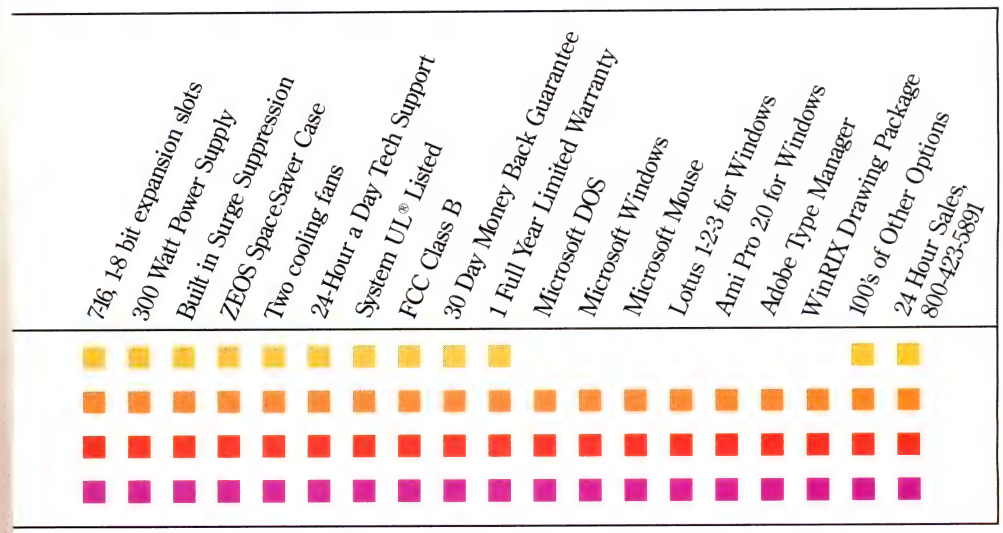
duty case holds more drives than most others and has a top notch power supply and plenty of cooling.

It really is quite a buy. The power supply is the *TurboCool 300 watt* unit (check the retail price of the power supply alone if you really want to see what a good deal you're getting). It's well worth considering.

YOUR ZEOS EXTRAS. NO EXTRA CHARGE.

And don't forget, if you purchase a ZEOS Windows system we'll also include





Consider the Vertical Option. We can build your new upgradable system in our eight bay vertical case. It comes complete with the 300 watt TurboCool power supply and two cooling fans. Add only $150.

Lotus *1-2-3 for Windows* plus *Ami Pro 2.0* with *Adobe Type Manager.* You'll be getting all the other ZEOS extras too.

If you don't go with the Vertical case, we'll send your 486DX2-50 in our seven bay SpaceSaver case (the 486DX-50 has 6 bays); it's complete with our top quality *300 watt* power supply, *built-in surge suppressor,* and *two* whisper quiet cooling fans.

DX2-50!

0MHz Price Barrier!

Remember too, ZEOS also provides you with 24 Hour Support, our 30 Day Money Back Guarantee, One Full Year Limited Warranty and our Express Parts Replacement Policy.

Ordering your new ZEOS 486DX2-50 is really quite easy. Simply pick up the phone and give us a call. You're going to love your new ZEOS '50. And that's a guarantee! *Call now Toll Free 800-423-5891.*

Computers *Now!*℠

Take Your Pick. We'll Ship Today!

RIGHT NOW. GUARANTEED!*

Yes, we can ship your new ZEOS '386 or '486 today! We've built up an extra supply of the hottest selling computers in America in their most popular configurations.

Here's how it works. We have these incredible ZEOS '386 and '486 color VGA systems pre-built and ready to ship. While supplies last, we will ship any of these systems to you *the day you order* subject to these conditions:

1. Your order must be received by 1PM Central Time M-F.
2. Credit Cards are subject to authorization.
3. Orders must be for ZEOS '386 or '486 systems configured as shown here. Any other systems or upgrades are custom built and will take slightly longer.

Yes! We can ship your new ZEOS system Right Now! Place your order by 1:00 PM Central Time and we'll ship today. Guaranteed!*

***OUR GUARANTEE TO YOU:**

If we accept your order for immediate shipment and fail to ship your system under the conditions outlined, we will ship it at *our expense* as soon as it is ready.

This offer is good only as long as these pre-built systems remain in stock; please give us a call to verify availability. This offer does not apply to other ZEOS systems or custom configurations.

IMMEDIATE SHIPMENT IS ONLY PART OF THE STORY.

These are not just any computer systems. They're the high performance, high quality ZEOS *upgradable* systems. Packing all the ZEOS value that has won PC Magazine Editors' Choice—*nine times!*

So why not give us a call right now. If we hear from you by 1:00 this afternoon, we'll get your new system on the way to you today! Call now Toll Free 800-423-5891.

Purchase orders from Fortune 1000 companies, Governments and institutions subject to approval. Leasing programs available. All prices and specifications subject to change without notice. Please call to confirm pricing, specification and warranty details. The following are trademarks of their respective corporations: Microsoft, MS-DOS and Windows of Microsoft Corporation; ZEOS, Computers Now!, SpaceSaver, SuperCase and Z-Card of ZEOS International Ltd. © ZEOS International Ltd., 530 5th Avenue, N.W., St. Paul, MN 55112 USA. ZEOS is a publicly traded company, NASDAQ symbol: ZEOS. Lotus is a registered trademark of Lotus Development Corporation. Ami Pro is a trademark of Samna Corporation, a wholly-owned subsidiary of Lotus Development Corporation.

Our most popular '386 & '486 packages! 128K Cache, 130MB Drive, 4MB Memory and More. Ready to ship today!

'386-33 ONLY $2595.
As a '486-33 ONLY $2995!

- Upgradable CPU module allows you to change processors as your computing needs change!
- Ultra high speed Zero-Wait *128K* SRAM Cache.
- 4MB of Zero-Wait DRAM, expandable to a Total of 32MB on the motherboard.
- Ultra Fast 130MB IDE Hard Drive.
- 1.2MB and 1.44MB Teac® floppies.
- ZEOS 14" High Res 1024x768 Non-interlaced VGA Color Monitor with Tilt/Swivel base.
- High speed Diamond SpeedStar Hi-Color VGA graphics card with 1MB RAM and Sierra DAC (32,000+ colors) *plus* WinRIX drawing software!
- Lotus 1-2-3 for Windows, *plus* Ami Pro 2.0 with Adobe Type Manager, *plus* Microsoft Windows and DOS 5.0, *plus* a genuine Microsoft mouse!
- Shadow RAM and EMS support for enhanced performance.
- ZEOS/RS 101 key SpaceSaver kbd.
- High Speed ZEOS I/O with two Serial, one Parallel & one Game Port built in.
- 7-16, 1-8 bit expansion slots. Math coprocessor support for '386.
- Rugged ZEOS SpaceSaver Case with two cooling fans for added reliability and product life.
- Seven drive bays and our custom 300 Watt power supply now with its own built-in surge suppressor.
- Includes ZEOS 24 Hour a Day Toll Free Technical Support and Customer Satisfaction package.

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Am Exp, Discover, Z-Card and COD.
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SEND FOR YOUR ZEOS CREDIT CARD

- **Low Consumer Rate!**
- **No Annual Fee!**

Now you can send for your own ZEOS Credit Card. It works just like a MasterCard or Visa for ZEOS purchases.

Fill out your Z•Card™ Application and mail it today to **ZEOS International, Z•Card Processing Center, 530 5th Avenue N.W., St. Paul, MN 55112.** We'll give you a call as soon as your credit line is established!*

Please complete all appropriate sections, *providing at least two years residence and employment history.* **THIS IS NOT A CREDIT AGREEMENT!** One will be sent to you upon authorization of an account. (This Form Must Be Signed To Process Your Order.) All Financed Purchases Are Subject To Credit Approval. **If You Have Any Credit Questions, Please Call 800-421-8942 For Assistance.** Thank You!

A married person may apply for individual credit. I am applying for (please check appropriate box):

☐ **JOINT CREDIT** with another person. Complete entire application.

☐ **INDIVIDUAL CREDIT** but rely on income or assets of another person as a basis for repaying the credit requested. Complete entire application.

☐ **INDIVIDUAL CREDIT.** Do not complete Section C.**

**If you are a married Wisconsin applicant, you must provide your spouse's information as indicated, even though your spouse may not be signing the contract.

NOTICE TO WISCONSIN APPLICANTS: YOU MUST DISCLOSE YOUR MARITAL STATUS:

☐ married ☐ unmarried ☐ legally separated

A. YOUR PERSONAL INFORMATION

Name _____

Home Phone (_____) _____

Soc. Sec. No. _____ Date of Birth ____/____/____

Address _____ Apt. _____

City _____ State _____ Zip _____

Since? (Mo./Yr.) _____ ☐ Buy ☐ Rent ☐ Other _____

Previous Address _____

City _____ State _____ Zip _____

Employer _____ Since? (Mo./Yr.) _____

Monthly Gross Salary $ _____ Daytime Bus. Phone (_____) _____

Previous Employer _____ From - To _____

Occupation _____

Income from alimony, child support or separate maintenance payments need not be disclosed if you do not wish to have it considered as basis for repaying this obligation.

Additional Monthly Income $ _____ Source: _____

Name & Address of Nearest Relative Not Living With You _____

_____ Relationship _____

B. CREDIT INFORMATION

PLEASE TELL US IF YOU HAVE: Checking Account ☐ Yes ☐ No
Savings Account ☐ Yes ☐ No

	Y/N	How Many?		Y/N	How Many?
Bank Loan	___	_____	Dept. Store Charge Card	___	_____
VISA	___	_____	Credit Union Account	___	_____
MasterCard	___	_____	Other Major Charge Cards	___	_____
Finance Company Loan	___	_____			

C. JOINT APPLICANT INFORMATION

Joint Applicant's Name _____

Soc. Sec. No. _____ Date of Birth ____/____/____

Address _____ Apt. _____

City _____ State _____ Zip _____

Home Phone (_____) _____ Date of Residence _____ (Mo./Yr.)

Joint Applicant's Employer _____ Since? (Mo./Yr.) _____

Bus. Phone (_____) _____ Monthly Gross Salary $ _____

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I authorize ZEOS International, Ltd. or its assignees to investigate credit records and to report my performance hereunder to credit agencies. I hereby certify that the following information is furnished to you for the purpose of obtaining credit and is true and correct to the best of my knowledge and belief.

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Date _____

Joint Applicant's Signature _____

Date _____

FOR MARRIED WISCONSIN APPLICANTS:
I acknowledge that the obligation described herein is being incurred in the interest of my marriage or family.

Buyer's Signature _____ **Date** _____

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*Financing not available in Alaska, Hawaii or outside the continental U.S.

Circle 216 on reader service card.

THE LATEST UPGRADES TO PRODUCTS YOU USE

BY GINA SMITH

Mathematica 2.0 for Windows

Wolfram Research's Mathematica and Microsoft Windows are no longer mutually exclusive: Wolfram is shipping Mathematica 2.0 for Windows, allowing users to mix Windows-generated text, graphics, animation, and sound with their Mathematica data. Call the company for upgrade information. ($995; Wolfram Research, 800-441-MATH)

Intex Ultragraphics

DOS- and Windows-based spreadsheet users alike can use Intex's Ultragraphics add-in for ten additional graph styles. Priced at $220 until April 30th and $245 thereafter, Ultragraphics also lets you rotate graphs, adjust color and sizing, and plot up to 15 data ranges. It works with Lotus 1-2-3 versions 2.2, 2.3, 3.0, and 3.1; all Quattro Pro versions; 1-2-3 for Windows; and Excel for Windows. (Intex Solutions, 617-449-6222)

Dr. Halo IV Paint and Imaging Pak

The newest version of Media Cybernetics' popular paint program, Dr. Halo IV Paint and Imaging Pak, has improved graphics, more special effects, and four built-in utilities: a viewer, a font editor, a screen grabber, and a slide-show producer. At $139, it's a bargain—but current users can upgrade for just $49. And as part of a special offer, pet owners can purchase the program new for the $49 upgrade price. (Media Cybernetics, 301-495-3305)

KnowledgePro Windows Version 2.0

Support for Windows Multimedia Extensions and an easier interface for novice programmers are just two of the new features in KnowledgePro Windows 2.0. Also new are a hypertext help facility and better graphics handling. Current users can upgrade for $99. Users who purchased the product after October 15, 1991, can upgrade free. ($249; Knowledge Garden, 516-246-5400)

Home Lawyer 2.0

Need a lawyer? Version 2.0 of Hyatt Legal Service's Home Lawyer adds modules for creating living wills and requests for credit reports, and it includes information about federal guidelines on sexual harrassment. Call the company for upgrade pricing. ($79.95; Meca Software, 800-288-6322)

Trackman for the Human Hand

Logitech's newest Trackman trackball pointing device is designed for the human hand. When you rest your hand on its curved base, the ball fits under your thumb. The Trackman is fully compatible with Microsoft's mouse drivers, and you can configure it as a two-button or three-button device. Though this one is designed for right-handed users, lefties can expect a Trackman built for them later this year. ($139; Logitech, 510-795-8500)

Quicken for Windows Version 1.01

If you're a Quicken for Windows user planning to move up to Windows 3.1, Quicken Version 1.01 is for you. New features include support for Windows 3.1's True Type fonts for printing checks and reports, improved data-entry capabilities, an animated tutorial, and improved exporting to tax programs. Registered users automatically receive a free update. Users who have failed to register can get Version 1.01 by sending in their registration cards. ($69.95; Intuit, 800-624-8742)

Spotlight

Four More Reasons to Buy a CD-ROM Drive

If you're thinking of buying a CD-ROM drive, here are four cool CD-ROM software packages that will tempt you.

Nuclear Computing's **Windows Shareware Gold** is a shareware junkie's dream. Available only on CD-ROM, it includes 366 Windows shareware programs, 100 bit-mapped images, 120 PostScript Type 1 fonts, 3,000 icons, and 4MB of digitized sound clips. And it all costs just $179. (818-764-5374)

Addicted to trailing Carmen Sandiego around the globe? Don't miss Broderbund's **Where in the World is Carmen Sandiego? Deluxe CD-ROM Version.** This multimedia update includes snazzy digital sound effects and foreign-language clues, hundreds of animation sequences, and 130 on-location photos. It costs $70 to $100, depending on the retailer. (800-521-6263)

If reading is your bag, Laser Resources' **Library of the Future Second Edition** is hard to resist. For $369, you get 900 literary works, from Aeschylus' *Agamemnon* to Cervantes' *Don Quixote*. The program lets you search for any idea, name, word, phrase, or date, which makes it an ideal resource for writers and students. (800-535-2737)

From Arabic to Zulu, Applied Optical Media's **World Vista** is a $79.95 multimedia Windows program that offers music and languages from various cultures and color photographs from more than 200 countries. (215-429-3701)

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All other brands are trademarks or registered trademarks of their respective holders. Specifications subject to change without notice. All labels shown were created on a PC compatible system. POSTNET available on PC version. © 1992.

Circle 181 on reader service card.

Short Takes

Cardinal Technologies' Soundvision Multimedia Upgrade Adapter is a convenient way to get your system up to multimedia standards. Soundvision is an all-in-one video/port/sound/SCSI adapter, and for just $459 you get Super VGA graphics in up to 1,024-by-768 resolution, 12-bit digital audio, 3-to-1 sound compression, SCSI circuitry for hooking up a CD-ROM drive, and ports for connecting a joystick, microphone, or MIDI device. (800-233-0187)

Acecad's Acecat Graphics Tablet is an alternative for people who are uncomfortable using ordinary mice and trackballs for cursor manipulation. Instead, you use a stylus-type pen on the 5-square-inch white tablet to navigate the mouse or cursor around the screen, which makes computer graphics more like traditional drawing. The Graphics Tablet's $129 price tag includes Windows drivers. (800-676-4223)

MicroSolutions' Backpack No-Slot Tape Drive blows away yet another excuse for not regularly backing up your hard disk. The Backpack tape drive requires no adapter card—just plug it into the parallel port and you're all set. The drive has its own parallel port, so you can plug your printer into the back of it. The DC-2000 comes in two models. The 40MB version costs $569; the 80MB version costs $669. Using long-length tape boosts the Backpack's capacities to 60MB and 120MB. (815-756-3411)

Super Tetris for DOS and Windows

The newest Tetris is more challenging than ever—not only do you have to correctly manipulate the falling squares but you have to worry about water flooding the play area. The object is to arrange the squares and navigate falling bombs in a way that clears the water from the Tetris pit. ($49.95; Spectrum HoloByte, 510-522-3584)

NCR Axsis for Safari NSX-20 Notebook

Looking for an easy way to tie into a network from your NCR Safari NSX-20 notebook? The answer is a new device called the NCR Safari Axsis. When connected to the Safari notebook (yes, this is the same Safari as AT&T's, but the product's name changed when the companies merged) and AT&T's Cellular Telephone 3730, the Axsis adapter fools the notebook's built-in modem into thinking it's connected to a real phone line. ($299; NCR, 800-225-5627)

Ergo NoteBrick

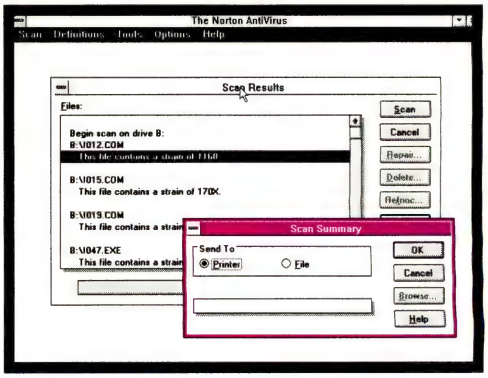
Ergo, maker of the funny-looking Brick PC, has scaled down the brick idea to notebook proportions. The 6.5-pound NoteBrick is a 33MHz 386 notebook with a 32K cache, 4MB of RAM (16MB optional), an 80MB hard disk, a backlit LCD display, and support for an external keyboard and VGA monitor. An expansion module that lets you add up to two ISA cards costs $295. ($2,995; Ergo Computing, 800-633-1925)

Voyager Modem for HP 95LX Palmtop

Com1 is now shipping a version of its Voyager modem that will link up to an HP 95LX palmtop PC. Included with the package are an acoustic coupler and an adapter that lets you connect the modem to the palmtop. The 2,400-bps modem weighs 6 ounces, uses a 9-volt battery, and is compatible with CCITT standards and the Bell phone system. ($390; Com1, 800-289-2661)

Piiceon Modems for Compaq LTE 386s/20 Notebook

Data/fax modem cards for Compaq's LTE 386s/20 notebook are now available from Piiceon. A V.32 card costs $945, and a V.32bis card costs $1,195. Both include fax capability, a 6-foot phone cord, and Magicsoft's ExpressFax software for communicating with Group III fax machines, fax boards, and other faxes and modems. (Piiceon, 800-366-2983)



Norton's Virus-Busting Software

The newest version of Norton AntiVirus for DOS and Windows, 2.0, offers faster virus scanning, runs as a background task or TSR, and uses just 1K of RAM. Registered users can upgrade for $29. ($129; Symantec Corp., 800-441-7234)

Philips Multimedia PC

Philips Consumer Electronics is offering a 386SX PC that is capable of running multimedia Windows applications. The system includes 4MB of RAM (upgradable to 8MB), an 80MB hard disk, built-in 640-by-480-by-256 graphics, a CD-ROM drive, a sound card, and copies of DOS 5.0, QBasic, Multimedia Windows 3.0, Compton's Encyclopedia, and Microsoft's Multimedia Bookshelf. ($2,499; Philips Consumer Electronics, 800-722-6224)

FormWorx for DOS Version 3.0

Mouse support, printing enhancements, and more than 100 forms templates are just a few of the new features in Power Up Software's FormWorx for DOS Version 3.0. The program also now includes a number of database functions, including the ability to sort, print, and otherwise manipulate dBASE-compatible DBF files. Registered users can upgrade for just $39. ($159.95; Power Up Software Corp., 800-851-2917)

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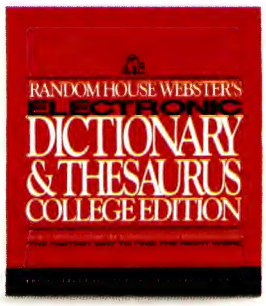

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A size

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ProTracer is a desktop printer/plotter that lets you produce A, B, as well as large C-size output. It prints sharp, precise lines on a variety of media including plain and bond paper, plotter paper, and vellum.

SPEED

ProTracer is fast and quiet because it uses the latest inkjet technology and an Intel i960 processor. Just compare it to any other large format plotter and you'll see. A complex C-size drawing often takes over half an hour on a pen plotter, while ProTracer completes the same drawing in only five minutes!

HIGH QUALITY OUTPUT

ProTracer achieves its high quality output by utilizing a 64 nozzle printhead to deliver crisp lines and bold, high contrast blacks. Its 360 dpi resolution assures sharp lines needed for everything from the most complex engineering drawings to sophisticated text and graphics used in letters and reports.

VERSATILE AND EXPANDABLE

Unlike other large format devices, ProTracer isn't limited to plotting. Instead, it can produce high quality finished output for a variety of

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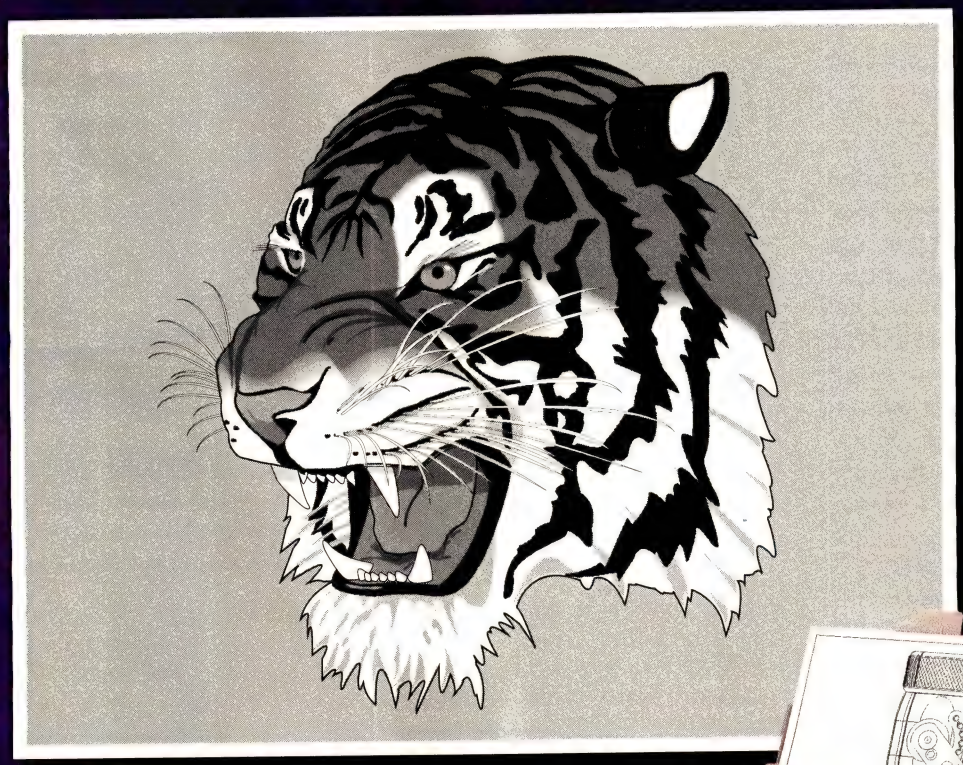
On a much larger scale.

C size



applications including word processing, spreadsheets, and desktop publishing. Start with the ProTracer base unit that incorporates resident IBM ProPrinter and Epson LQ-1050 emulations, as well as an ADI plotter driver for AutoCAD users. Then, depending on your needs, choose from a variety of easily installable upgrades and accessories including HP-GL and PostScript® language emulations, and memory.

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2 MB memory upgrade	$299
8 MB memory upgrade	$899
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PacificTalk (AppleTalk interface module)	$199

*Sheet feeder I is required for use

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Many Improvements Give DOS's dBASE IV a New Lease on Life

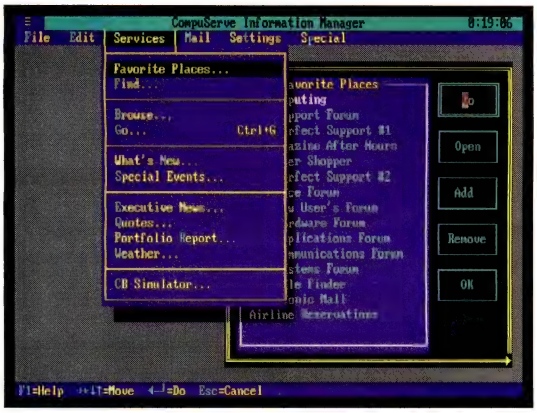
NAVIGATING COMPUSERVE

CompuServe Information Manager, the venerable online service, has caught up to the advanced interfaces of newer services such as Prodigy and America Online. CIM, a text-based system, has a windows structure that spares you from encounters with the unfriendly command line.

Version 2 of the mouse- and modem-friendly program has the ability to transfer files as a background operation while you mosey around the forum you're in (you can't leave it while the transfer takes place, however).

CompuServe (800-848-8199) subscribers can download CIM for free; a kit with documentation costs $25.

BYRON NILSSON



dBASE IV, VERSION 1.5, $795
BORLAND INT'L
1800 GREEN HILLS RD.
SCOTTS VALLEY, CA
95067-0001
(800) 331-0877

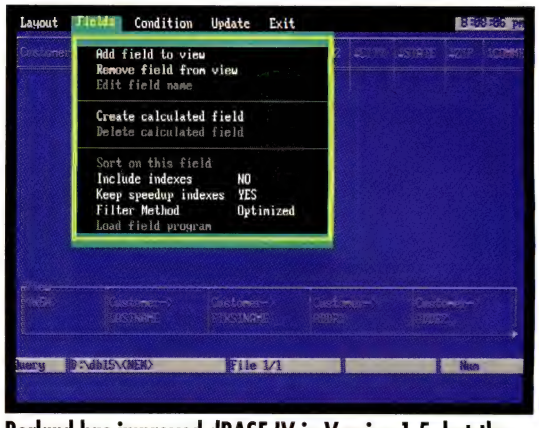
BORLAND'S ACQUISITION of Ashton-Tate left many dBASE users wondering about the software's fate, but the company's newest dBASE IV release, Version 1.5, is evidence that Borland remains committed to the product. The new version offers small but important advances, including mouse support, new functions, and improved performance.

The changes in Version 1.5 are evident immediately. The dBASE installation program automatically installs disk caching if it finds expanded memory. The installer can modify Windows 3.0 to add dBASE as a new group. (dBASE IV remains a DOS application; a Windows version is due out soon, however.)

You can use a mouse to select menu options and files or to reply to prompt boxes. You can jump between records on a browse screen. Double-clicking on a memo field opens the text editor, and clicking on a field in a data entry screen moves you directly to that field, bypassing sequential order. The mouse can be used to resize or move fields during report or screen design, but you cannot resize windows (such as the pop-up memo editor).

Version 1.5 supports 40 work areas (up from 10) and dynamically allocates space for databases so that you won't reserve unneeded memory. In Version 1.5's Query by Example you can edit views created from multiple files and place read-only restrictions on any field in the query.

Borland has paid particular attention to speed. In Version 1.1, every index is updated when a record is added, changed, or deleted. In the new version, however, indexes may be updated after each record or after multiple changes. An index can be ignored if the changed record doesn't affect it. The Index Query optimizer, IQ!, can select the best method for record selection: SET FILTER, INDEX FOR, or SET KEY. Index tags that are created during a query can be used again to speed subsequent executions.



Borland has improved dBASE IV in Version 1.5, but the program's look and feel are similar to earlier versions, as this Query by Example screen demonstrates.

Plenty for Programmers

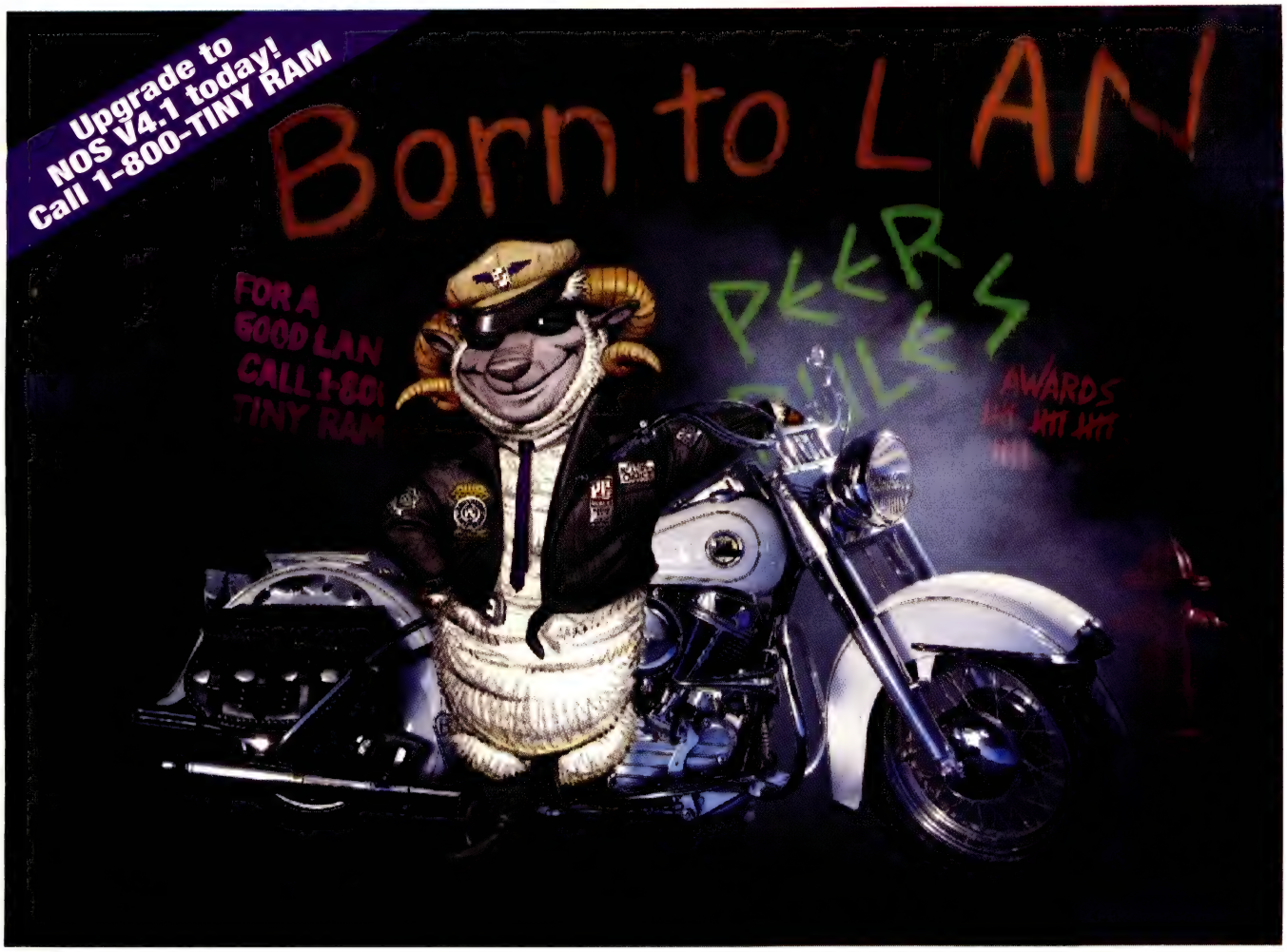
Programmers, sit up. You can now use summary operators (SUM, AVERAGE, MIN) and the GROUP BY operator on calculated fields. And by using new commands in the configuration file, you can specify programs to be run before, after, or during use of the features in the Control Center.

The developer's edition has been eliminated, and the template language compiler is now incorporated into the standard product. Royalty-free RunTime is, however, a separate product.

New functions include DESCENDING and UNIQUE (both of which return information about index tags) and TAGCOUNT (which gives the number of active indexes). A smart-key filter can be added to the SET KEY TO command to specify records based on an existing index. Because an index is used rather than data, performance is improved.

Version 1.5 of dBASE IV includes low-level file I/O to open, create, and close files, read and write an exact number of bytes, and move to a specified position within a file. Import and export for Lotus files (Versions 1.0 through 2.1) and Framework III and IV have been added. *(continued on page 76)*

LEADER OF THE PACK



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A Bill of Rights for Presentation Audiences Is Long Overdue

AS I SQUINTED THROUGH THE DARKNESS AT A PARADE OF 35mm images, I found myself becoming indignant.

Slide after slide was unreadable, failed to communicate, or detracted from the central message. "And I paid for this abuse," I muttered. Three consecutive lousy presentations.

This scene wasn't some two-bit small-business seminar, either. This was a gathering of software industry leaders. These were men and women with nearly unlimited access to technology that is capable of dazzling audiences. But in the end, technology was a hindrance rather than a help, as presenters tried to use every color, fill all empty space on the screen, and apply every typeface in their libraries.

PHOTOGRAPH BY WEBB CHAPPELL

We should be accustomed to this by now. For all the good PCs have done, every major new business-productivity tool has introduced a regression in the art it attempts to automate. Spreadsheets brought us bad business models and a false sense of security about how our businesses work. Desktop publishing brought us ugly documents and multiplied the number of people who could fill our in-boxes with junk.

And now, presentation-graphics programs give millions the means by which they, too, can fail to communicate.

It's time that we stood up for the rights of presentation audiences, who sacrifice money and time to be informed, instructed, or entertained. It's time that we offered a Bill of Rights, which should be stuck to all the presentation designers' monitors before they start mousing merrily around the screen.

Here are some simple considerations every audience member has the right to expect from a presenter:

1. THE MESSAGE OF EACH SLIDE WILL BE CONCISE, CLEAR, AND MEMORABLE. If the message cannot be articulated in a single, straightforward sentence that can be remembered easily, then the slide may be trying to accomplish too much.

2. EVERY WORD ON A SLIDE WILL BE LEGIBLE TO EVERY PERSON IN THE ROOM. A speaker will not need to apologize to those in the back who may not be able to read the labels. Every presentation will be designed for the back row.

3. ALL TEXT WILL BE HORIZONTAL. We will not have to cock our heads to read axis labels and bar names; it's better to rotate the bars than to make members of the audience turn their heads.

4. COLOR WILL BE USED TO CONTRAST, HIGHLIGHT, OR SYMBOLIZE, NOT MERELY TO DECORATE. The fewer colors on a slide, the better. Every color will be used purposefully.

5. SLIDE TITLES WILL MAKE A POINT, IF THEY'RE USED AT ALL. Merely describing the data ("U.S. Population, 1776 to 1992") wastes valuable space on a slide, but using that space to make a point ("Population Growth Is Slowing Dramatically") tells the audience what to look for. If the title doesn't advance the message, drop it.

6. PROPORTIONS WILL BE REPRESENTED HONESTLY. Bar charts that exaggerate differences by starting the axis at a number other than zero are inexcusable. They deceive the eye and often the mind.

7. THREE-DIMENSIONAL CHARTS WILL BE USED SPARINGLY. While the effect is state of the art, charts are at best distracting and difficult to interpret (Does the axis line up with the front surface or the rear?), and at worst they are downright deceptive. To make something seem bigger than it really is, use a 3-D bar chart without data labels.

8. PIE CHARTS WILL NOT BE USED TO MAKE COMPARISONS. Can you tell which slice is growing and which is shrinking? The eye and the mind are not designed for this kind of work.

9. EVERY SLIDE WILL SUPPORT THE MESSAGE OR MAKE IT MORE MEMORABLE. A single slide can have a greater impact than a whole tray of them.

These rules are just a start. They all begin with one principle: Focus on what you want your audience to remember, not what you want to see.

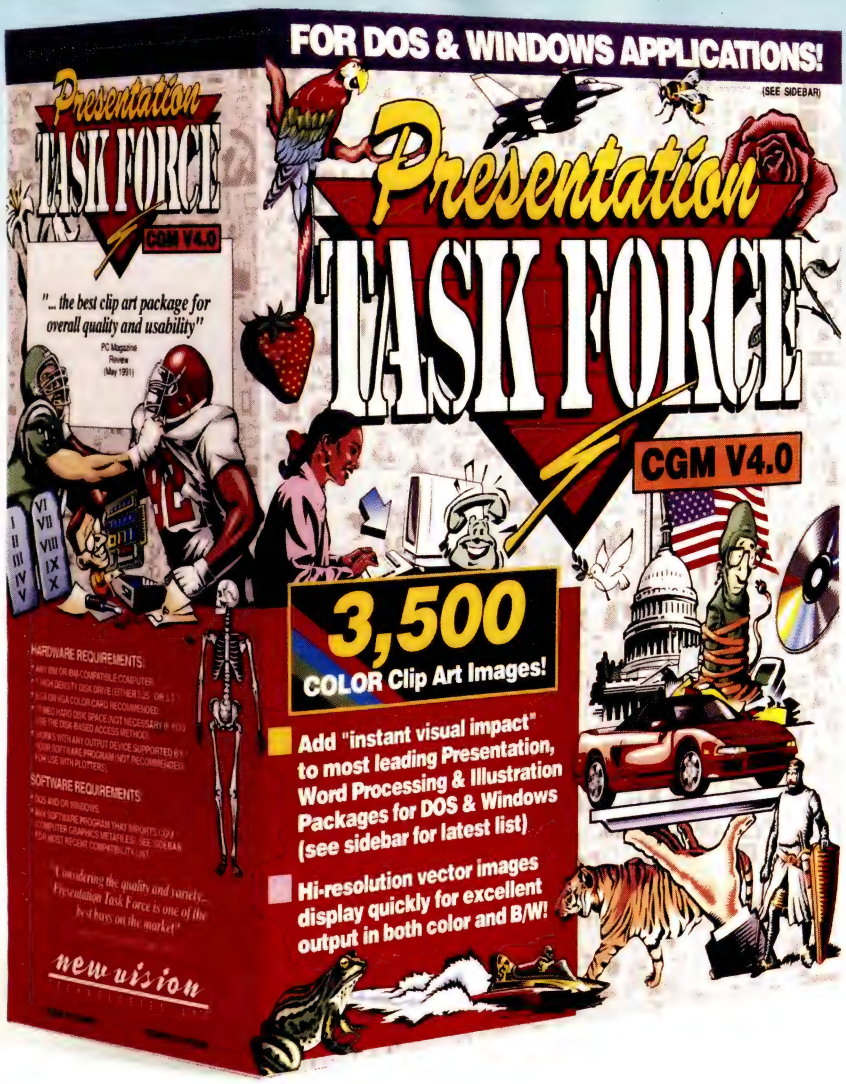
The new crop of Windows graphics software offers valuable new approaches to making presentations, such as templates, advisors, and other composition tools. The programs also offer the ability to customize with infinite variety. And that's where we see well-meaning presentation authors getting into trouble.

Remember that your audience has a right to clarity and a fair chance to absorb your message. Technology is seductive, but the real measure of a successful presentation is how much your audience takes away. If we can't handle 35mm slides today, how will our audiences survive animated presentations on multimedia platforms tomorrow?

Don't let technology seduce you into creating confusing presentations.

Television production standards have set high expectations, and home video has given us just enough skill to be dangerous. Yet outside of glitzy marketing presentations and interactive educational programs for the ages, it's difficult to imagine a world in which multimedia business presentations deliver much beyond amateurish attempts at Hollywood special effects.

One of the big oil companies used to market its gasoline as "power to be used, not abused." Maybe it's time for graphics software companies to stick that admonition on the shrink-wrap. And to teach customers to pledge their allegiance to their audiences again, and not just the technology. ◪



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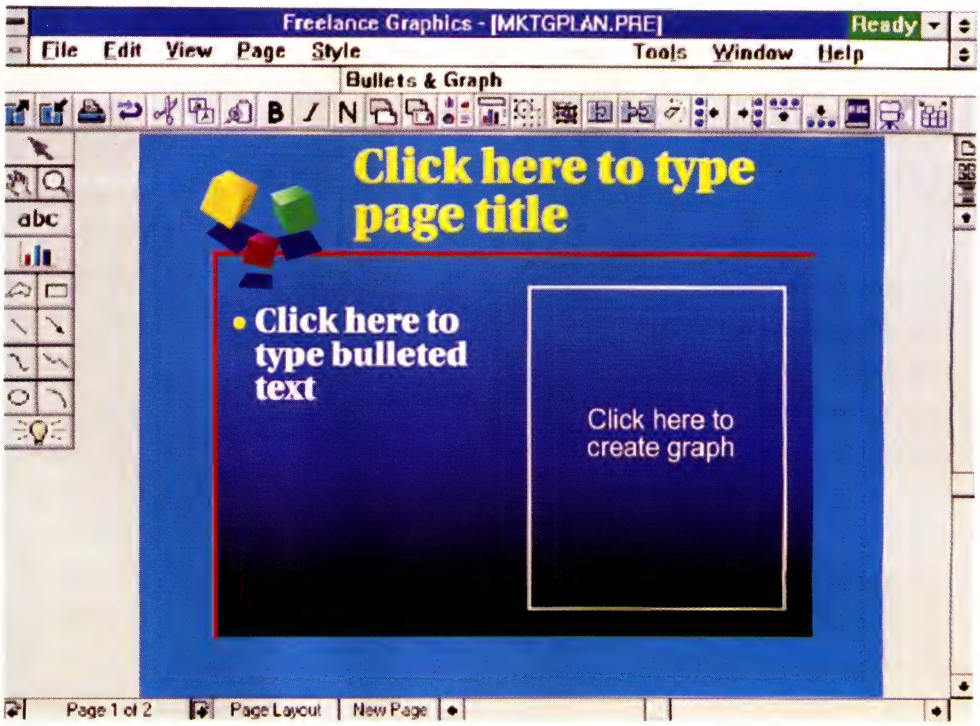

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–PC/Computing, 11/91

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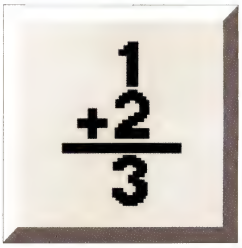
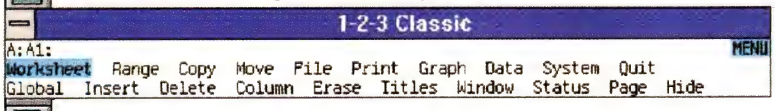
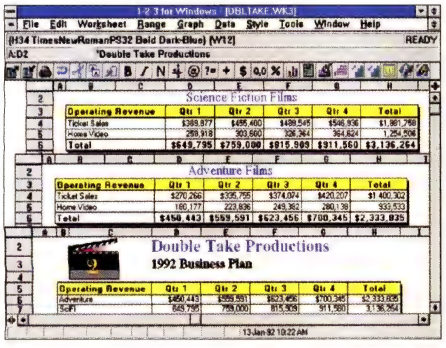


The 1-2-3 Classic® menu helps make the move from DOS to Windows a smooth one. Just press the slash key and the familiar 1-2-3 menu appears, fully-functional, on screen.





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Most people recognize Lotus® 1-2-3® as The World's Most Popular Spreadsheet.™ But what some people don't know are the unique and useful things we've done with it.

Consider 1-2-3 for Windows.™ Which has innovations that other spreadsheets, such as Microsoft® Excel, don't have.

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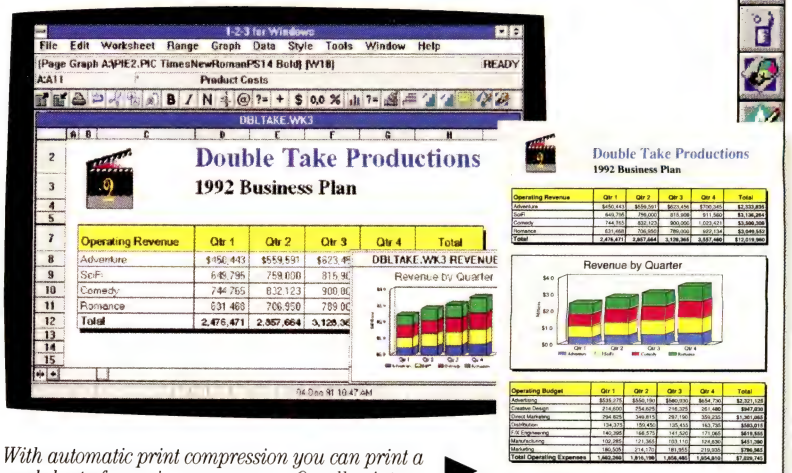
*All registered 1-2-3 for Windows customers should have automatically received the Update Kits. This includes users who upgraded directly from Lotus or returned their registration cards to us before October 7, 1991. For more information

Only 1-2-3 for Windows offers SmartIcons™—our customizable icon palette—for one-click access to your most frequent tasks. And unlike the Toolbar™ in Microsoft® Excel, only 1-2-3 for Windows lets you create your own unique icons and place them anywhere on the screen.



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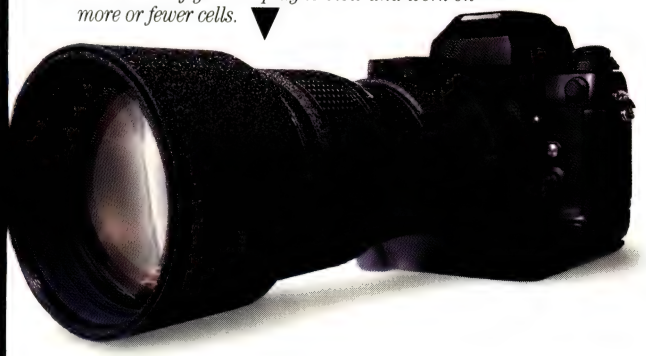
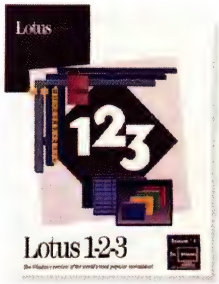


With other spreadsheets, you have to paste clipboard data on your next step or you'll lose it. With 1-2-3 for Windows, it remains available to paste until your next edit.



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SOPHISTICATED REPORT WRITER

Users who are unhappy with Paradox's inability to combine tables in a report or who want to add font options to their output will be pleased with the $249 R&R Report Writer for Paradox Version 4.0. The program employs a banded report layout similar to Paradox's and features page preview, drag and drop field placement, and the ability to mark and edit multiple fields at once. With R&R, you can dramatically improve the look of reports.

R&R has long been a favorite in the dBASE world. The Paradox version can handle Paradox 3.5 files, including those created with the Paradox Engine.

You can define sophisticated calculations, such as percent of total and weighted averages, and you can query or sort these fields. You can establish one-to-many relationships with point-and-click simplicity and quickly define mailing labels (up to 99 across) as well.

Concentric Data Systems' (800-325-9035 or 508-366-1122) R&R software is text-based and comes with an unlimited runtime license.

JAMES E. POWELL

dBASE IV, *from page 68*

Still No Match

dBASE 1.5 still isn't on a par with FoxPro—it does not include check boxes and radio buttons, for example, and it doesn't match FoxPro's speed. Also absent is Vroom, a memory manager found in other Borland products. In fact, several minor touches you might expect from a Borland product are missing. Speed has improved, however, and users and programmers alike will be pleased that Borland hasn't radically altered the look and feel of dBASE IV.

Borland's Paradox is becoming known as an ad hoc tool for users, while dBASE is considered more suitable for programmers. Paradox's programming language mimics its menus, while dBASE remains a true programming language.

With a compiler and Windows version on the horizon, Borland has proved that it hasn't abandoned the industry standard.

JAMES E. POWELL

WordStar for DOS: Still Standing After All These Years

WORDSTAR FOR DOS 7.0, $495
WORDSTAR INT'L
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(800) 344-6044

WHAT AGING FORMER champion is no longer a top contender, but still packs a punch and deserves applause for a spirited comeback? WordStar for DOS, Version 7.0.

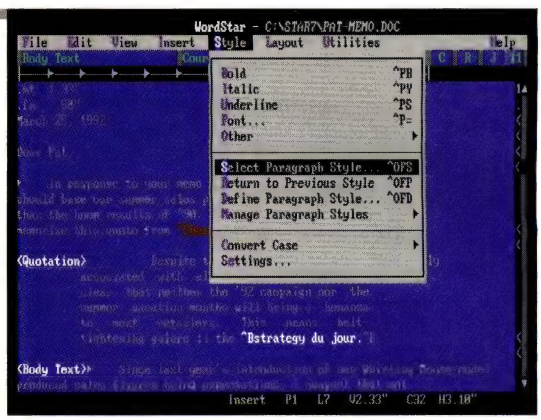
Besides much-improved import/export and macro abilities, the latest version of the world's oldest PC word processor has a slick new graphical interface. But don't fret, Ctrl-K-B fans: WordStar's legendary command set is 100 percent intact, avoiding the forced retraining Microsoft imposed on users who upgraded from Word 5.0 to 5.5.

Whether you prefer Alt-*key* menus or Ctrl-*key* commands, the program still emphasizes heavy-duty text editing over fancy desktop publishing. In other words, it's the opposite of the artsy, sluggish WordStar for Windows. Overall, WordStar for DOS is astonishingly spry for a program that predates DOS.

True, WordStar for DOS Version 7.0 retains its tricky page formatting, its numerous default settings that you must change through a fiercely unfriendly customization program, and a bulky bundle of add-ins and utilities, ranging from a communications program to Inset Systems' Inset for editing and printing graphics.

But WordStar's new mouse-controlled pull-down menus, dialog boxes, and style bar for fonts and paragraph styles make it feel like a different program, even if the point-and-click controls merely supply embedded codes or WordStar's infamous "dot commands."

Even veterans who turn off the menus can still use a mouse to highlight blocks of text. Also, new editing conveniences let you work with two blocks at once, copying text to and from the Windows Clipboard (when running under Windows' Enhanced mode). The Clipboard filter gives WordStar the ability—at long last—to create ASCII files without extra carriage returns.



WordStar for DOS now features Windows-like menus, but die-hard fans can still use Ctrl-*key* combinations.

Unfortunately, you must still type extra returns or adjust margins manually to make space for imported graphics, but at least WordStar now recognizes various graphics files and converts them to Inset's PIX format from within documents.

Though weaker at desktop publishing, WordStar for DOS has two things WordStar for Windows doesn't: macros and the ability to open two document windows at once. You can create macros by record-and-play-back keystrokes. The program now features a macro conversion utility, a macro language, and single-step execution for advanced users—a vast improvement from the compile-in-advance "shorthand" macros of earlier versions.

WordStar's printer support and page preview remain first (*continued on page 82*)

You hear a lot of promises about pen computing. But we put ours in writing.

There's a lot of excitement these days as companies prepare to offer their first pen computers and software.

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When we introduced ours.

Two years (and ten thousand units) later, GRiDPAD® has become the most effective way to collect and transfer data in the field.

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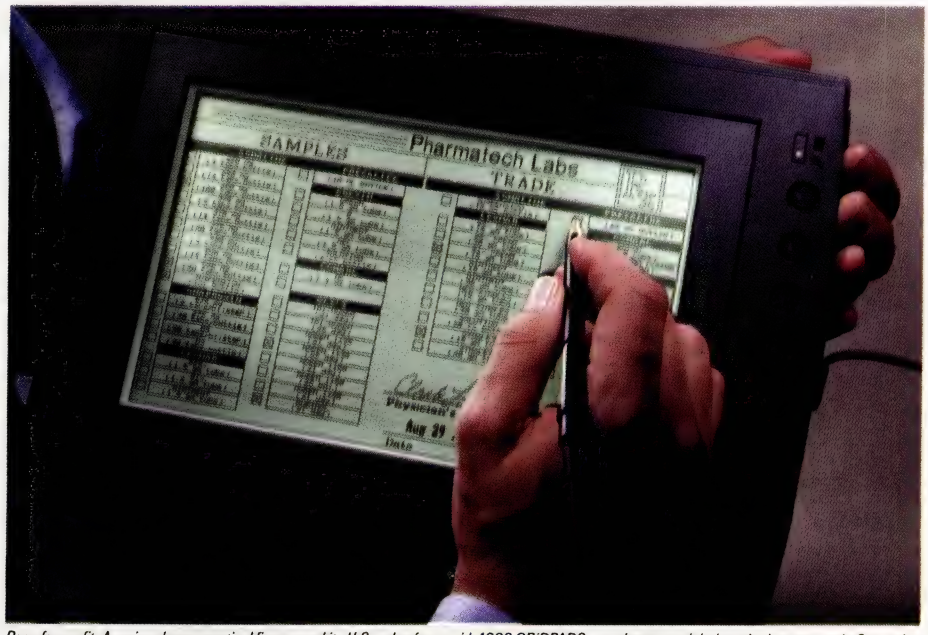
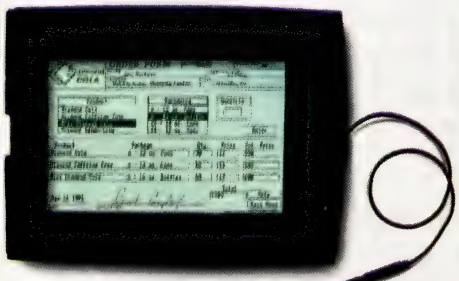
For example, our battery lasts 8 hours between charges. So you get a full workday of uninterrupted computing.

Our bright blue backlit display automatically adjusts to any environment. So it's easy to read, indoors or out.

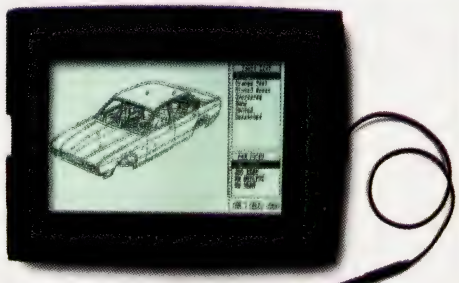
And the internal 9600 bps modem can instantly upload your field data to a departmental PC. Or the corporate mainframe.



Pens for profit: A major pharmaceutical firm armed its U.S. sales force with 1000 GRiDPADS—and recouped their entire investment in 8 months.



Keeping up with the market: Several major consumer products companies have equipped their field sales operations with hundreds of GRiDPADS to quickly spot new market and sales trends.



Vrooom, vrooom: The Big Three and foreign automakers use GRiDPAD to speed inspections and conduct customer surveys.

Putting it on the map: Hundreds of field service crews use GRiDPAD to quickly locate electrical and gas lines.

Best of all, GRiDPAD is designed for people who are more at home with a clipboard than a computer. In fact, with just a day's training, anyone can hit the road with confidence.

You simply write directly on the screen to fill out forms (it reads your printed handwriting), check off boxes, draw graphics and capture signatures.

Who's using GRiDPAD? The food, pharmaceutical, transportation and distribution industries, to name a few. And with more than 300 software companies currently writing applications, you can choose from a wide range of existing software solutions.

In fact, since GRiDPAD is MS-DOS® based, your programmers can easily develop applications to fit your business. Even those with minimal programming skills can quickly create applications with the help of our GRiDPen®-Pal Tool Kit. There's even more support through application workshops and software development training programs in 45 GRiD Systems Centers throughout North America.

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John Dickinson

IBM's Shrinking Role in the Software Arena Leaves a Gap to Be Filled

IT'S TIME TO START THINKING ABOUT WHAT THE COMPUTER industry would look like without IBM, or at least with an IBM with a greatly reduced role.

IBM is in the midst of launching the "New IBM" for the fifth or sixth time in as many years. Once again, the company promises to reshape itself, recover from its malaise, and return to growth and profitability. This year another 20,000 or so employees will lose their jobs. This attempt to rebuild IBM, like others in the past, will probably fail. About the only thing that distinguishes this year's reorganization from earlier ones is that IBM's stock has gone down instead of up, which means that even Wall Street has given up on Big Blue's efforts at reform.

As the PC has risen to its important position in corporate computing, IBM's role has diminished. IBM's lost leadership position has allowed a new set of leaders to emerge, and its absence from the scene would solidify new leadership positions.

The most obvious example is in PC operating systems and software. IBM has long since ceded operating-systems leadership to Microsoft. Perhaps more important is that Microsoft's rise to the top has made it clear that software, not hardware, will lead the computer industry into the next generation. IBM failed to recognize this until it was far too late to do anything about it. Without Big Blue on the scene, Microsoft's—and software's—leadership of the PC industry will be unquestioned.

This means that MS-DOS, for all its failings, will continue to be the most successful operating system in the industry. In partnership with Windows, it will continue to dominate PC operating systems until something better comes along. That something won't be IBM's OS/2; it almost certainly will be Microsoft's New Technology (NT) system, which is scheduled for release within a year. NT is slated to be the basis for the next generation of Windows, networks, and everything else that matters in PC operating systems. NT may be more successful than OS/2 at replacing DOS, but it won't surprise me if Microsoft fails to accomplish a complete transplant, or if it doesn't even try.

Two of the more useful, albeit painful, lessons of the OS/2 experience are that an installed base the size of DOS's is impossible to convert to a new system, and that it may not make sense to change. Many important applications will continue to run successfully on machines that don't support NT, or even Windows. Until those applications become obsolete, there isn't much point in changing. Microsoft should have learned these lessons by now and should be prepared to position NT as the operating system for the next generation of computers, applications, and users. If so, Microsoft will set reasonable objectives for its new operating system and will make a reasonable transition without much pain.

Networking may also be difficult for NT because it has to contend with another large installed base, this one dominated by Novell's NetWare system. Network managers in charge of tens or hundreds of PCs don't want to change network operating systems, at least not quickly. Too much business depends on NetWare. Like DOS, it will not be replaced until the advantages of an alternative are clear.

Novell will thus continue to be important in LAN operating systems, and other network players will probably continue to play the spoilers. NT-equipped PCs will deal effectively with foreign networking solutions, as will their DOS and Windows cousins, because Microsoft won't let LAN and computing environments fake it out the way they did during the OS/2 years.

Without IBM, Microsoft's leadership in operating systems will make its leadership of the PC industry crystal clear, but whether that leadership will allow Microsoft to attain, and sustain, dominance in applications software and programming languages is questionable. My guess is that it can't.

Only two of the many players in the programming languages market are significant. Appearances notwithstanding, Borland has an edge on Microsoft, especially in the C-language software for Windows applications. A cadre of compiler writers at Borland just won't quit producing better, higher-performance language products than anyone else.

Applications are more complicated. There are too many application areas, and too many ways to approach each one, for any one company to dominate the entire field. Microsoft's image as an unstoppable software behemoth is somewhat inaccurate because its applications strength is confined to Windows programs, and for these it depends on its "inside track" on Windows programming techniques.

What would the software industry look like without IBM?

If you don't believe that significant competitors such as Lotus, Symantec, Aldus, and Micrografx will catch on soon, then you haven't been around the computer industry very long. Many have caught on already, and it won't be much longer before others do, too. Then, new companies will grow up around Windows programming, and even more companies will evolve around applications software concepts that haven't been thought of yet, by Microsoft or anyone else.

So, Microsoft will be the most important, but not the only, software player in a software-dominated PC industry. But what does a future without IBM hold for the hardware market? No one company will dominate, but a few will call the tune. Check in next month to find out who and how.

PHOTOGRAPH BY FRED STIMSON

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KODAK DICONIX IS IMPRESSIVE

Among the numerous available portable printers, Kodak's (800-344-0006) Diconix 180si is one of the smallest, lightest, and least expensive.

Weighing in at only 2.9 pounds (3.5 pounds with batteries), the 180si is an enhanced version of Kodak's 150 Plus printer, with more fonts, a redesigned control panel, and a driver for Windows 3.0. At a list price of $399 ($419 for a serial interface) and a street price of under $300, the 180si provides straightforward, budget-conscious portable printing.

This printer provides decent-looking copy on either single-sheet or continuous-feed paper, 192-dot-per-inch graphics, and print speeds as fast as 236 characters per second.

The compact 180si will fit in your briefcase alongside a notebook computer and will print for 50 minutes when using the five C-size batteries instead of the AC adapter. The print cartridge, which is rated for 500 pages, is easily replaced.

If your concerns are portability and price, the Diconix 180si fills the bill for occasional road missives. JON PEPPER

WORDSTAR FOR DOS, *from page 76*

class. Printing and merge printing no longer require separate commands, and a fax option saves formatted documents as PCX files so you can send them via your fax board.

Friendly menus, a cleaner display, and a few improved features don't make WordStar the well-rounded powerhouse that WordPerfect 5.1 is, nor is WordStar a match for Word for Windows or Ami Pro. But curing the program's cantankerous image and keeping a 1970s application competitive in the 1990s are no small feats. WordStar for DOS 7.0 is a pleasant surprise. ERIC GREVSTAD

Picture Publisher Covers Image Processing from Input to Output

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WITH THE RELEASE of Picture Publisher 3.0, Micrografx is upping the ante in the growing field of image-editing software. Despite some well-heeled competition from Aldus PhotoStyler and Z-Soft's PC Paintbrush, Picture Publisher is most impressive.

Picture Publisher benefits from Micrografx's interface for its Windows Draw program. You'll find some similar ideas in Picture Publisher, such as a hint line at the bottom of the screen and tool options that unfold from main groupings on a floating icon bar. This keeps the screen uncluttered while offering power users ready access to controls.

Version 3.0 lets you edit or create images from black and white to 24-bit color, offers plenty of special effects and unique filters, and supports leading file formats and scanners. It also has a full set of illustration and drawing tools as well as numerous other features.

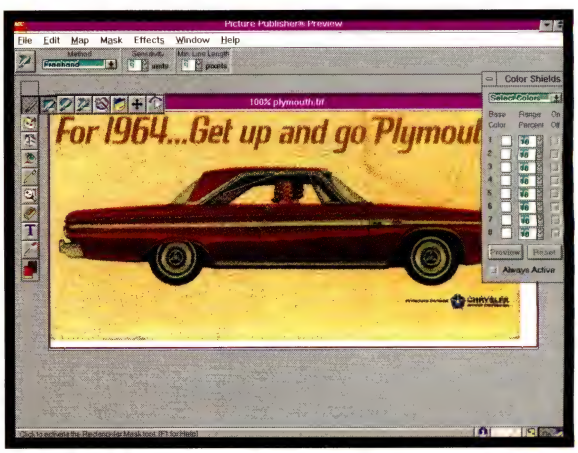
Picture Publisher is especially strong in its masking ability. You can mask anything from the entire image down to almost a few pixels, and a Smart Mask will automatically mask an area based on color breaks in an image.

The program has comprehensive color controls and calibration. You can precisely calibrate output devices, monitors, and scanners; work with all leading color models; and quickly and easily reduce or correct color images.

Picture Publisher lets you create and save masks and other settings so that you can stretch your editing over several work sessions. Rather than complete a complex job in one sitting, you can return to the mask settings you were working with, a timesaving boon for designers.

Other notable features include a scratch pad for testing effects before applying them and context-sensitive help. You can also interrupt screen redraws by making a menu selection. And, as with Publisher's Paintbrush, Picture Publisher lets you link two views of the same image so you can do precise, pixel-level editing and see the results at normal size.

Picture Publisher offers some of the best output controls we have seen. You can produce full-process color separations, make adjustments for cyan, magenta, and yellow ink, and take advantage of Micrografx PostScript and PaintJet drivers, to name a few options.



Picture Publisher features a hint bar at the bottom of the screen, plus a floating palette with tool options that unfold.

Picture Publisher has more than enough utility to justify its $795 price, which puts it at the high end of the image-editing software price range. As an added bonus, Micrografx will bundle an 18-bit color hand scanner from Mustek until the end of June. With the hand scanner, Picture Publisher is an almost irresistible bargain. JON PEPPER

Datacomm Commentary

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Circle 116 on reader service card.

UDS

MOTOROLA

QUICK GRAPHICS CONVERSIONS

The profusion of graphics file formats has spawned any number of programs that help unite the seemingly endless parade of protocols. One of the more straightforward and comprehensive is Image Alchemy 1.5 from Handmade Software (408-358-1292).

The package, which lists for $79.95, can convert three dozen image file formats, from the well known to the obscure. Besides conversion, you can also resize images and use the JPEG compression standard to shrink unwieldy files to a fraction of their original size.

Image Alchemy is simple to use, though the command line interface seems old-fashioned. Still, it's hard to beat the value that it offers for serious desktop publishers and graphics users.

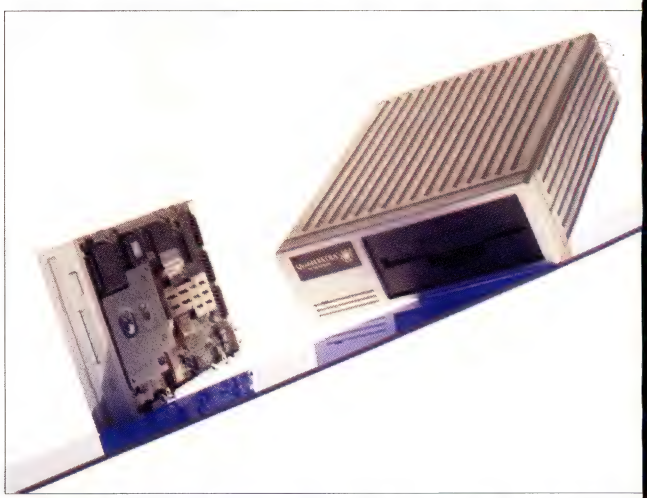
For those who regularly work with many different graphics packages, Image Alchemy will ensure you don't dwell among the unconverted.

JON PEPPER

A New Breed of High-Capacity Floppy Drives Offers Extra Storage

THE IDEA OF a floppy holding more than 360K used to be a pipe dream. Who'd have thought that floppy drives capable of writing to 20MB floppies would become a reality?

Quadram's QuadFlextra Very High Density Floppy (VHDF) drive and Insite Peripherals' Floptical drive are just the first of a new breed of high-capacity floppy drives. But the two use incompatible technologies: You can't slip a 20MB VHDF floppy into an Insite drive; nor can you use a Floptical floppy in the QuadFlextra. Still, we found them to be a more than adequate stopgap between the 1.44MB and 2.88MB floppy drives that come standard with most PCs and the larger, more expensive stationary and portable hard disks. In fact, you could say that the two sit in the middle in terms of speed, price, and removable capacity.



Making high-capacity floppy drives a reality are Insite Peripherals' Floptical drive (left) and the QuadFlextra VHDF from Quadram, both of which write to 20MB floppies but use different technologies.

Though both floppy drives carry rated average access times in the 76-to-86-millisecond range, the QuadFlextra was somewhat faster in most of our real-life file copying tests. Unfortunately, a buyer must trade speed for compatibility—the Brier Flextra mechanism on which the QuadFlextra is based won't work with your existing 720K or 1.44MB floppies.

The Insite drive, though considerably slower, uses a dual-head system that reads either the Insite 20MB disks or regular floppies. If you plan on using the Insite just occasionally—to archive or transport large files, for instance—you might find the extra compatibility well worth the penalty in speed.

Getting both drives up and running was simply a matter of installing the SCSI adapter and formatting the 20MB disks.

It's too soon to see how the battle between Quadram's VHDF technology and Insite's Floptical technology will play out. But for now, depending on whether compatibility is your crucial issue, either one will supply extra storage capacity.

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ONE OF THE best things about WordPerfect for Windows is that it uses the same printer drivers as the DOS version, and they are several times snappier than Windows 3.0's own slow-moving drivers. Even heavily formatted files in WordPerfect return control of the keyboard and get hard copy out of the printer much sooner than Windows alone.

But one drawback to WordPerfect's printer drivers has been that they couldn't use any of Windows' scalable soft fonts, such as Adobe Type Manager or Bitstream FaceLift. The choice was speed or versatile fonts.

LaserTools' Fonts-on-the-Fly 2.0 eliminates the dilemma. It delivers speed with WordPerfect's own drivers and lets you use scalable type from 2 points to 200 points. The software comes with 19 fonts in 7 typeface families from AGFA—the same source for the Intellifonts in the LaserJet III—that are as attractive as those made by Adobe. *(continued on page 90)*

NETWORKS MADE SIMPLE

intel inside

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GUIs More Than Meet Users' Needs, But Do They Win Users' Hearts?

THE LONG-AWAITED WINDOWS 3.1 IS MAKING THE SCENE, but most users remain confused by the DOS-Windows-OS/2 battle. DOS users are still in the majority, yet Windows gets all the attention. Still, we have yet to see many new Windows applications that do more than replace DOS programs. New Windows applications tend to be for desktop publishing or page layout. Since few businesses have much use for such programs, it seems that Windows only appeals to niche markets. John and Jim discuss this confusion and offer their opinions.

DVORAK: Jim, this operating system mess is getting messier by the minute. Do you use Windows all the time?

SEYMOUR: No, but I'm slowly becoming a convert. I was one of the original Windows skeptics. I doubted not only whether it would ever be fast enough and whether Microsoft would scrub out the unrecoverable application errors but also whether we really *need* it. But I find myself gradually coming around.

I don't boot into Windows, but I go into it almost every day. I particularly rely on Excel for Windows, which I think may be the best PC application of any kind today. But I often stay in DOS (or drop out of Windows into it) for my everyday word processing, communications, and database programs.

How about you?

DVORAK: I don't use Windows all the time, but the way things are going, I'm going to be forced into it. I haven't switched because I really like the speed of my machine, and I hate to sacrifice it for a few programs. And there aren't many interesting applications except niche graphics.

SEYMOUR: I know what you mean; I like the snap in DOS apps, too. You just don't get it with Windows, even on a 486.

You know, in my experience, very few power users in corporate America stay in Windows all the time, but most at least have it on their machines. And contrary to what you say, I think we're seeing lots of interesting new programs for Windows.

DVORAK: Like what? Maybe someday some PC programs will compare with what is already available in the Macintosh environment. I hope you don't start raving about Word for Windows.

SEYMOUR: Well, Word for Windows 2.0 is a sensational program. But when I process words—that is, when I *write*—I'm more interested in how it reads than how it's going to look on paper, so I love the clean screens and relentless focus on the words that you get when you use DOS word processors.

DVORAK: Not only that, but there is a huge variety of great writing utilities that work best under DOS.

SEYMOUR: There's another aspect of Windows worth mentioning: It's a pretty good memory manager, especially if you toss out Microsoft's SmartDrive and install 386MAX. I like how Windows lets you use hotkeys to get in and out of DOS programs, several of which can be open at the same time on your Windows desktop. In fact, I like the memory tricks so much that I now have 12MB of main memory in my PC, so I don't run into memory problems when I want to open several DOS programs at once.

Of course, you can do that with a simpler context-switcher such as Carousel, but Windows does have advantages, even for DOS fanatics.

DVORAK: You know, the OS/2 faithfuls will tell you that Windows is a mess compared with OS/2. But that's a battle that will have to be worked out in the market. Either way, I still wonder what corporation can afford to upgrade its operating systems and software just to move up a notch.

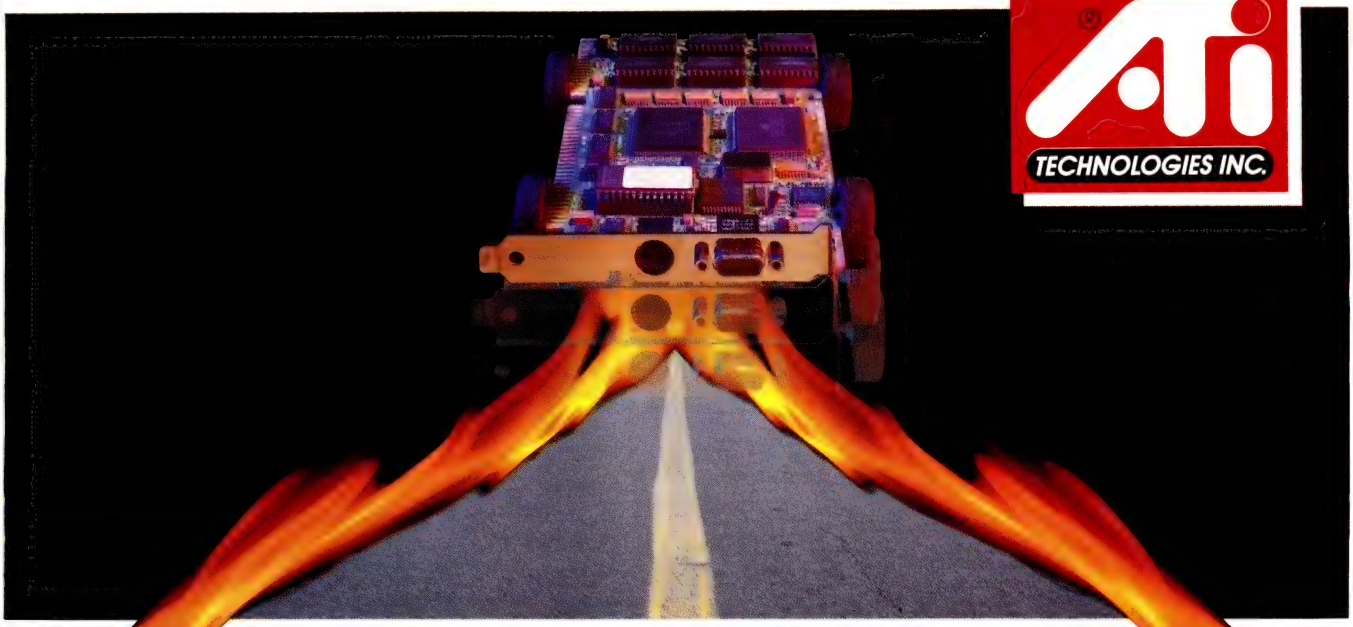
SEYMOUR: I have no hope that OS/2 will be less of a mess than Windows; in fact, I think it's going to be even worse.

The problem I have with large-scale corporate adoptions of Windows is that I'm skeptical that most office workers want or need what Windows offers.

For example, secretaries who grind out plain-text documents do fine with WordPerfect or Word for DOS. Despite the flashy demos for WordPerfect for Windows and Word for Windows that show you how to slap a color illustration into the middle of a letter and build a new letterhead on the fly, I don't know anyone in the real world who does that—or who *wants* to.

Sometimes I want to grab Bill Gates by the lapels, shake

PHOTOGRAPHS BY RUVEN AFANADOR



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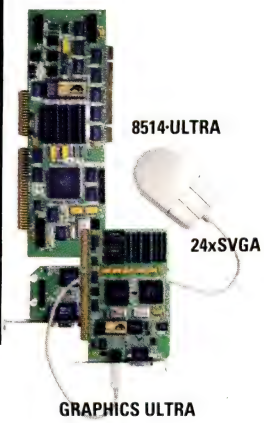

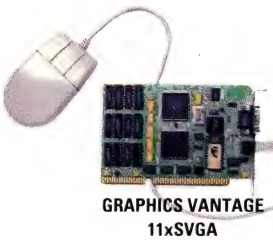

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Circle 112 on reader service card.

him, and tell him to read my lips: "In the real world, Bill, people don't *do* that stuff."

DVORAK: Actually, I have to agree with you. The Mac has had those wacky capabilities since 1984, and I still don't see anyone using them. I never do. They seem to be gee-whiz marketing features needed as an edge to sell the product. It's a waste of code as far as I'm concerned. Once programmers get into the graphical user interface mode, they get carried away.

SEYMOUR: In fairness to programmers, I think it's the marketing people who've gone berserk. They *love* those dumb ads that show people doing artsy business letters. When you protest that people just don't do that, they respond, "Ah, but now they *can.*" I think programmers are just doing what they're told. After all, programmers don't write letters full of cute little drawings, either.

I think we have to be careful, though, about assuming that GUIs in general and Windows in particular can't do anything to clean up the old DOS standards we're used to. Although I don't think people ought to run out and buy 1-2-3 for Windows, for example, 1-2-3 for Windows' SmartIcons are a great way to work. Point-and-click features, such as the AutoSum routine introduced by Excel, save a lot of time. You don't do that in DOS programs. Quattro Pro is now and will be for the foreseeable future the highest expression of the DOS worksheet program. Even Quattro Pro is being forced into faking a GUI to provide some of these features.

Clearly, GUIs can make some tasks easier. It's just that too many software publishers act as though everything is better under a GUI. That just isn't so.

DVORAK: Have you ever watched Microsoft coders work in Windows? They always use the keyboard shortcuts, anyway. Sometimes the GUI's intensive mouse requirements are nuts.

SEYMOUR: Well, sure, I use the keyboard shortcuts, too. In fact, the best productivity tip for anyone using any GUI app—either on the Mac or under Windows—is to learn those shortcuts, then keep your left hand on the keyboard for the shortcuts and let your right hand manipulate the mouse. It's incredible how fast you can work when you use both approaches.

Neither Windows nor OS/2 is successful in luring the bulk of DOS users to GUIs.

What about Windows' demands for more hardware? I tend to think knocking Windows' requirements for more memory, fast video cards, and higher-resolution displays is a bum rap. We ought to be doing those things anyway.

DVORAK: I agree. After all, you don't drive a car for 20 years, do you? And memory at $40 a megabyte is dirt cheap.

SEYMOUR: We can't keep talking about Windows without acknowledging this spring's coming-out party for OS/2. It's clear that the OS/2-plus-Presentation Manager route is a dead end. Windows 3.1 and its successors, especially the 32-bit Windows/NT, represent one viable path. The IBM/Apple deal for a new operating system based on Apple's Pink code is another. Both paths give users more integrated, fully realized graphical environments. But OS/2? It's going to be left out in the cold, the third entry in a two-horse race. It's a dead end. Do you know anyone who seriously uses OS/2?

DVORAK: Actually, I keep receiving memos from people who claim it's all they use and that it works great. I'm not writing off OS/2 so quickly. If it becomes a pure marketing battle, maybe OS/2 hasn't got a prayer against Microsoft's marketing muscle. But I'm sickened by Microsoft's "here's what's next—it will fix everything" approach to Windows. I thought 3.0 was remarkable. Then I hear 3.1 is even better. Now there's Windows/NT, which is supposed to be the ultimate.

SEYMOUR: Yeah, Microsoft always promises that everything but the Ginsu knives will be in the next release. Then, a week after each release, it's "next time" all over again.

I don't dispute that OS/2 works; it does, for the most part. It's just that IBM will never be able to deliver on its promise of "running Windows apps better than Windows." And you'd want to use Windows apps under OS/2 because OS/2–Presentation Manager apps are few and feeble.

DVORAK: I agree that IBM's "running Windows apps better than Windows" claim sounds dubious. Even if OS/2 did, though, IBM is bungling it. Telling everyone that OS/2 runs Windows discourages developers from writing code for OS/2. Why should they when they can write code for Windows and still have both markets? The dumbest thing IBM could have done was to make that claim.

SEYMOUR: True, it was dumb, but what choice did IBM have? IBM burned so many companies that spent a lot of money developing OS/2 Version 1.0 and 1.1 apps—which never found a market because OS/2 1.0 and 1.1 were such sorry efforts—that IBM knew there wouldn't be any second-generation OS/2 apps for some time. So maybe IBM had to adopt this stance on running Windows apps.

DVORAK: Maybe so. But we've left Novell out of the mix. Novell is shipping DR DOS with its networks, which means that a lot of machines will run DOS for a long time. Personally, I recommend a wait-and-see attitude. And, as you know, I'm usually more opinionated than that. It's just that I can't see enough pieces of the puzzle to predict what will happen. Actually, I hope OS/2 will be a success. We need it.

SEYMOUR: I think a sound recommendation is to stay in DOS if you do relatively simple work at your PC and you already have apps that you know and like. If you're the rare bird who wants to pipeline stuff back and forth or stick pictures in your spreadsheets, if you like a Windows app that's clearly the best of its kind on any platform, such as Excel, or if you need features that only Windows offers, get Windows 3.1, go to work, and forget about OS/2. ◩

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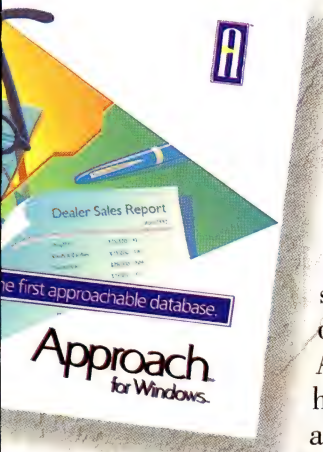

"Approach for Windows gets an A+ rating," writes Lawrence J. Magid of the LA Times Syndicate. *"It's powerful, it's easy to use, it doesn't take up an inordinate amount of disk space and it's reasonably priced."*

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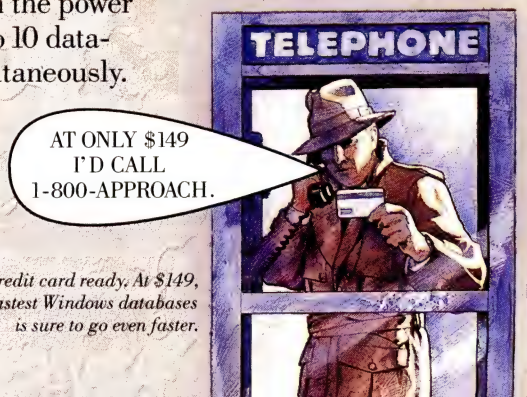

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ACCELERATE YOUR WINDOWS

WinSpeed, a software Windows accelerator, is an easy, inexpensive way to make Windows sizzle.

Priced at $79, Panacea's (800-729-7420) WinSpeed is actually a set of highly optimized 256-color Windows video display drivers for Super VGA boards built around the ATI, Paradise, Tseng Labs, and Trident video chip sets. Using WinSpeed is just a matter of replacing your existing Windows display drivers with WinSpeed's.

We used Excel, Word for Windows, and other Windows applications to test how well WinSpeed improved real-world screen-scrolling and window manipulation on a 33MHz 386 PC. The WinSpeed drivers boosted performance by an average of 33 percent. And on one test, when measuring scrolling speed in Word for Windows on a Paradise clone card in 640-by-480-by-256 mode, WinSpeed improved Windows' performance by an astonishing 69 percent.

WinSpeed is a must-have for anyone who uses a 256-color Super VGA display with Windows. PAUL BONNER

FONTS-ON-THE-FLY, *from page 84*

Fonts-on-the-Fly works with DOS and Windows versions of WordPerfect—ideal for offices where both are used and where it's important to maintain a consistent look among documents. Fonts-on-the-Fly also doesn't depend on the printing device. Its output is the same with any of the scores of printers that it can be configured for, which means that documents produced on a 9-pin dot matrix printer look nearly as good as those produced on a laser printer.

Teamed with LaserTools' PrintCache, which replaces Windows' Print Manager to spool printing jobs, the two not only produce hard copy faster but, just as important, they return control of the keyboard sooner so you can continue to work as a document prints. The same complex document that took 83 seconds to give up control of the keyboard using Windows printer drivers and Print Manager took only 32 seconds with Fonts-on-the-Fly alone, and 15 seconds when it was teamed with PrintCache.

However, Fonts-on-the-Fly doesn't provide onscreen scalable fonts like Adobe Type Manager does. LaserTools says it's working on that. Until then, Fonts-on-the-Fly—especially combined with PrintCache—is the best enhancement for WordPerfect. RON WHITE

LANtastic for Windows from Artisoft Gives A New Look to Peer-to-Peer Networks

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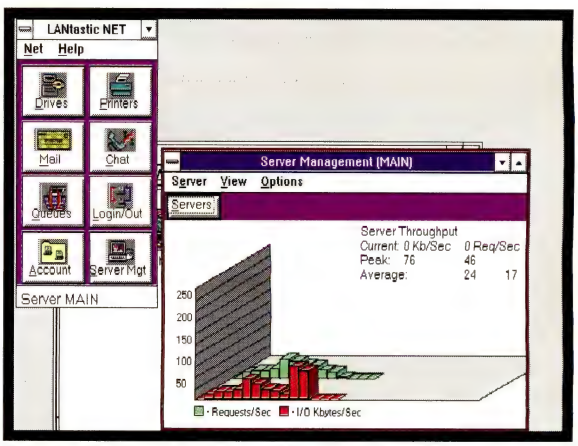
ARTISOFT HAS HAD some real success with its LANtastic peer-to-peer network, and now it's ready to enter the Windows world. Artisoft's new LANtastic for Windows is a simple way to bring the ease of Windows 3.0 to LANtastic networks. The benefits of a Windows interface on a LANtastic network are numerous. You get full dynamic data exchange support for trading data between networked programs and users, and, best of all, you get multitasking: Windows 3.0 is an easy vehicle for monitoring network resources, reading e-mail, or chatting with several users—all at the same time.

Here's an example of how Windows works when you need to access networked data: Let's say you've started up Windows and have a large text file in Microsoft Word. Now you need to add a chart from Excel, but the data resides on a hard disk somewhere across the network. One click on the mouse button takes you to the LANtastic control screen. One more click pops up the network resource tool, and from there you select the server and drive needed. Click back on the Word icon and you're done.

We installed LANtastic for Windows in less than five minutes. If you want to do the same, you'll need LANtastic Network Operating System (NOS) Version 4.0. Artisoft sells several different types of network starter kits to get you networking without shelling out a lot of cash. Its latest starter kit includes the LANtastic NOS software with two AE-1/T 10Base-T Ethernet adapters, a Peer-Hub 10Base-T concentrator, cabling, and documentation. The $899 two-node price is reasonable.

We found the network management tools a pleasure to work with in the Windows environment. It's especially easy to change your network configuration quickly without exiting your Windows program.

If you've got a LANtastic network full of Windows users, $299 for this product is money well spent. PAUL FERRILL



With its Windows interface, LANtastic for Windows lets you access data on a LANtastic network with a few mouse clicks.

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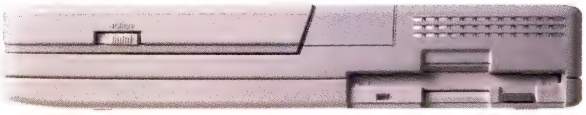
And at $1,995 the DECpc 320P Notebook is *priced* to go. Fast.

We put it all on the table. The 20MHz DECpc 320P Notebook Personal Computer is the most comfortable to use on the market today, while the components inside are the hottest. We started with the Intel™ 386sx™ processor and the built-in 2400 baud modem (optional data/FAX modem). Because we don't believe you should have to sacrifice power for portability.



Next, we made the standard 2MB memory expandable to 8MB—plenty of room for running multiple Windows applications. For extra oomph in spreadsheet recalcs, we made room for an optional 80387sx™ Math Coprocessor. Then we added a 40MB (optional 80MB) hard drive and a 3.5″ Floppy diskette drive for ample storage—with DOS™ 5.0 and Windows 3.0 pre-installed. We topped off the chassis with the Triple Super Twist (TST) Backlit VGA display—that puts Windows on-screen without an aggravating blur. We built an AC adapter to weigh less than a pound—so it's easy to carry around—*and* we added the Logitech™ TrackMan® Portable, for FREE.

We even included a three-hour plus battery life to keep you up and running even when you're away from it all.

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The **DEC**pc 320P Notebook

Includes:

Microprocessor:	Intel i386sx running at 20MHz
Memory:	2MB
Storage:	40MB IDE Hard Disk Drive 3.5″ 1.44MB Floppy
Display:	TST Backlit VGA
Modem:	2400 bps Data
Keyboard:	84-key Keyboard
Mouse:	Logitech TrackMan Portable
Operating Systems:	MS-DOS 5.0 and MS-Windows 3.0 (factory installed)

(Carrying case included)

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The **DEC**pc 316sx

Includes:

Microprocessor:	Intel i386sx running at 16MHz
Memory:	1MB, 80ns Memory Kit
Storage:	52MB IDE Hard Disk Drive 3.5″ 1.44MB Floppy
Resolution Mode:	1024 X 768 SVGA Adapter
Display:	14″ Multi-sync VGA Color Monitor
Keyboard:	101-key Keyboard
Mouse:	Three-button Mouse
Operating Systems:	MS-DOS 5.0 and MS-Windows 3.0

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The **DEC**station 325c

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Microprocessor:	Intel i386 running at 25MHz
Memory:	4MB, 80ns Memory Kit
Storage:	52MB IDE Hard Disk Drive 3.5″ 1.44MB Floppy 1.2″ dd Floppy
Resolution Mode:	1024 X 768 SVGA Adapter
Display:	14″ VGA Color Monitor
Keyboard:	101-key Keyboard
Mouse:	Three-button Mouse
Operating Systems:	MS-DOS 5.0 and MS-Windows 3.0

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THE PACKS.

The **DEC**pc 320P Notebook

Includes:

Microprocessor:	Intel i386sx running at 20MHz
Memory:	2MB
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Display:	TST Backlit VGA
Modem:	2400 bps Data
Keyboard:	84-key Keyboard
Mouse:	Logitech TrackMan Portable
Operating Systems:	MS-DOS 5.0 and MS-Windows 3.0 (factory installed)

(Carrying case included)

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FR-PCP11-FA

The **DEC**station™ 320sx

Includes:

Microprocessor:	Intel i386sx running at 20MHz
Memory:	1MB, 80ns Memory Kit
Storage:	52MB IDE Hard Disk Drive
Resolution Mode:	1024 X 768 SVGA Adapter
Display:	14″ Multi-sync VGA Color Monitor
Keyboard:	101-key Keyboard
Mouse:	Three-button Mouse
Operating Systems:	MS-DOS 5.0 and MS-Windows 3.0

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DJ-PC443-05

The **DEC**pc 433 Workstation

Includes:

Microprocessor:	Intel i486 running at 33MHz
Memory:	8MB, 70ns Memory Kit
Storage:	40MB IDE Hard Disk Drive 3.5″ 1.44MB Floppy
Resolution Mode:	1280 X 1024 TIGA Adapter
Display:	20″ Color Monitor
Keyboard:	101-key Keyboard
Mouse:	Three-button Mouse
Operating Systems:	MS-DOS 5.0 and MS-Windows 3.0

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Title _____

Company Name _____

Address _____

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Your Telephone No. _____ Your FAX No. _____

I'd like information on:

- ☐ DECpc i386 and i386sx based systems
- ☐ DECpc i486 and i486sx based systems
- ☐ The DECpc 320P Notebook
- ☐ The Catalog

Customization Worksheet

Your base system is a: ☐ 286 ☐ 386 ☐ 486 ☐ Other

How many applications will your PC(s) run in a typical workday? _____

What best describes the type of work the system will be used for? (Check all that apply)

☐ Word Processing	☐ Desktop Publishing	☐ Scientific Research
☐ Order-entry	☐ Education	☐ Software Development
☐ Database (filing records)	☐ Design (CAD/CAM)	☐ E-Mail
☐ Financial Calculations	☐ Engineering	☐ Other industry-specific applications (please specify)
☐ Retail Store Management	☐ Industrial Process Control	

How many people work in your group, department or small business?
☐ Less than 10 ☐ 10-20 ☐ 20-35 ☐ More

Is your operating system:
☐ DOS ☐ DOS with Windows ☐ OS/2 ☐ MAC ☐ UNIX™ ☐ Other

Which of the following graphics-oriented applications best describes your needs? (Check all that apply)

☐ Desktop Publishing	☐ Realtime Modeling	☐ AutoCad
☐ CAD/CAM	☐ Animation	☐ Business Graphics
	☐ Image Processing	

LAN Communication

How many PCs do you have installed? _____ From how many manufacturers? _____

What kinds of connections does your PC(s) require? (Check all that apply)

- ☐ Links with other PCs in the immediate surroundings
- ☐ Connection to the local area network (LAN) throughout a building
- ☐ A line to a host system in a remote location

What kind of media (cable) is used in your LANs today? _____

What is the networking software now being used in your company? _____

What kind of host system will your PC communicate with?
☐ DEC ☐ IBM ☐ Other _____

What Kind of Service Do You Really Need?

☐ On-site Hardware Support ☐ Software Support ☐ Telephone Support
☐ Training ☐ FAX Hotline

How many of your users take portables on the road? _____

Do you currently have a service contract(s) for your PCs? ☐ How many? _____

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Low-Cost Silentwriter Model 95 Offers Next-Generation Features

SILENTWRITER MODEL 95, $1,749
NEC TECHNOLOGIES
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BOXBORO, MA 01719
(800) 632-4636

NEC HAS THE best bargain in personal PostScript/PCL lasers you'll find anywhere. Its Silentwriter Model 95 lists for only $1,749, but that's just half the story. The real story is what you get for that price.

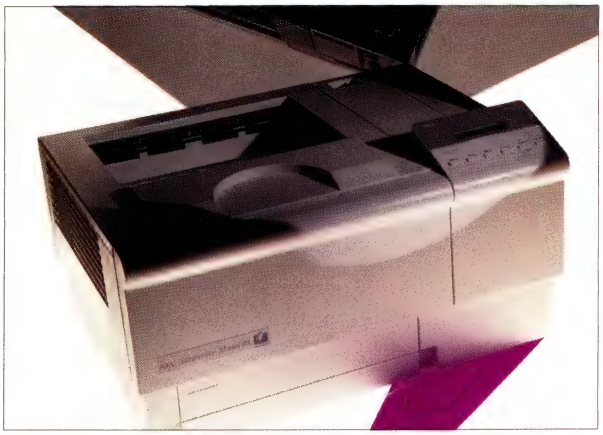
For starters, the Model 95 offers Adobe PostScript Level 2, which, among other things, provides significant gains in print performance when used with applications that take advantage of its new file-compression capabilities. The Silentwriter 95 also comes with the PCL 5 found in Hewlett-Packard's LaserJet III and IIIP and an edge-smoothing capability called SET (sharp edge technology), which is similar to HP's resolution enhancement technology (RET).

At this price, you might expect to get a 4- or 6-page-per-minute print engine, but NEC uses the Minolta 6ppm laser-diode engine, which produces very fine edges and rich, full, dark tones. The Silentwriter Model 95 comes with a one-piece toner/drum cartridge containing microfine toner that lasts for about 6,000 pages.

Like the Everex LaserScript LX and the QMS PS-410, the Model 95 offers parallel, serial, and AppleTalk ports, and it switches among these ports automatically as it senses print jobs coming from them. That means you can hook up a Mac and a PC to this printer and print from them at the same time, with the printer automatically switching to the correct emulation mode—PostScript or PCL—of each file printed.

NEC plans to offer a $599 9,600-bps fax option for the Model 95 that will let you send and receive resolution-independent Group III or PostScript plain-paper faxes. As with the Everex LaserScript Fax, you'll only be able to send faxes that originate on your computer, but NEC provides software drivers for this purpose. NEC expects to offer delayed transmission, automatic retry on busy signals, cover-sheet generation, activity summaries, time/date stamps, confirmations, and broadcast features with this option.

Other features worth noting include the Model 95's 2MB of RAM, expandable to 5MB, and a built-in, 250-sheet paper drawer (an additional 250-sheet feeder is optional). In addition, there's a separate, built-in, 15-sheet envelope feeder. Rounding out the printer's features are two HP-compatible font cartridge slots, making this product as fine a PCL printer as it is a PostScript device.



NEC's Silentwriter Model 95 offers PostScript and PCL, three interfaces, and automatic emulation switching at a low price.

We did find a couple of shortcomings: Texas Instruments and Dataproducts both offer PostScript Level 2 printers based on a smaller, 9ppm Sharp print engine. But NEC beats both companies on price, so most users will find the performance trade-off a good one. And in overall size, this printer is one of the biggest personal lasers around, measuring about 18 by 13.5 by 9 inches. We looked at a late prototype model, so we couldn't run print performance tests, but there's little doubt this printer would benefit from a faster onboard processor than its 16.7MHz Motorola 68000. The case design and styling are uninspired, unlike the rest of the Model 95.

Overall, this is a very impressive printer that provides next-generation features at a great price. If you want PostScript and PCL 5, and if you want to connect more than one computer to your printer, the NEC Silentwriter Model 95 is your best choice. **J. SCOT FINNIE**

SELECT THE BEST INSURANCE

***Time Solutions'* (203-459-0303 or 800-552-3302) MedSure helps you choose the best health insurance coverage, reduce your taxes by using pretax earnings to pay for medical expenses, and track medical insurance benefits and claims (including Medicare and Medicaid).**

MedSure is largely educational and is organized like a book. The right side of the screen shows a topic on a page. The left side offers explanations of the topics.

The program includes worksheets for recording policy details and comparing coverage. It's better suited to policies with deductibles and percentage payments than to HMO policies, which require a flat payment for each service or visit. You can print claim forms using blanks ($14.95 for 50 forms) for most major insurance companies. MedSure also lets you store health records, from immunizations to accidents. The program is an excellent tool for organizing medical records, with cost savings that could easily recoup its $89.95 list price. **JAN SMITH**

Buttons, Bars, Ribbons, Icons: Now You Can Take 'Em to the Limit

"OK, WE SHIP IN THREE MONTHS, SO THIS HAS GOT TO BE the last design meeting."

"The spec freezes today, gang. This is it. Marvin?"

"Let me load the prototype here." (Oohs and ahs all around.)

"Beautiful job, Marv."

"Thanks. OK, we signed off on most of this stuff last time. Top line is your Title Bar. Next line is your Button Bar. Next line is your Ribbon. Down here above the Slider is your Explanation Area. Over here's the Icon Corral. Notice the new barbed-wire border?"

"Ooh! Cute!"

"Thanks. Takes up a little space, but I think it makes a statement."

"Rad!"

"Open a document, and you've got the Docubar and this new thing we worked out last time. Remember the Characteristics Curtain—sort of a Windows pun?"

"Looking good. Everybody in agreement so far?"

"Wait a minute! Somebody left it out!"

"Somebody left what out?"

"My Belly Button!"

"Oh. That."

"We agreed on it last time. Who took it out?"

"Alex, we had second thoughts . . ."

"Second thoughts? It was great! Come on! You press the Belly Button, you go straight to Help Haven."

"Well, nobody got it!"

"Come on, Marv. We designed the campaign around it. 'Trouble? Poke the Belly Button—your personal umbilical cord!' Remember?"

"Davis thought a question mark was more logical."

"A question mark? That's old! Just like everybody else! I want my Belly Button! Put it back!"

"It is sort of cute, Marvin. Come on."

"All right. The Belly Button goes back."

"Thank you."

"Don't mention it. Now, so far, all the stuff you've seen is mostly what we've agreed on."

"Except for the question mark."

"Alex, your Belly Button is back. We're moving on to new stuff. Let me just click this here." (Oohs and ahs all around.)

"Wow! Who did the design on that?"

"Marla. Great job, huh?"

"Tremendous, Marl. I swear, that looks exactly like a real keyboard up there. Right down to the 3-D shadows."

"Well, that was the idea."

"Right, and nobody else has this Keyboard Klicker."

"The Mac has it. Key Caps."

"Alex, did you find a pebble in your Grape-Nuts this morning? So we borrowed a little. Point is, this is a real productivity booster. No moving your hand from the mouse. Just point and click the letters you want."

"Right. You can toss your keyboard. The desk space you get back is incredible."

"We were looking at some of those stylus-based machines. Hey, if they can virtualize the keyboard, why can't we? And we get entree into that market. Bonus."

"And you can customize the keys up there. Why have a tilde if you're not Spanish? Turn that into an extra Pause key or something?"

"Magnificent job, guys. So when you click a key, where do the letters appear onscreen?"

"In that window on top."

"That little one? One line?"

"Yeah. That's it. All we have room for."

"I don't know . . ."

"Look at the trend, Alex. Every new Windows program eats a little more screen with icons and buttons and bars and ribbons. Our studies show that on average 73 percent of the screen is now devoted to controls."

"Right. So we decided to go the whole nine yards and take the whole screen for ourselves. Except for that one line, of course. We call it the Document Porthole."

"I do like those rounded corners."

"Ergonomic. Our user studies show that by displaying only a single line in a gently curved area, we increase the user's focus and concentration by 43.627 percent. Wilt calls it The Typewriter Metaphor."

"See, what you have to realize is that Windows and the Mac and other GUI interfaces are all derived from technology developed at Xerox PARC 15 years ago."

"Ancient history."

"Right. Their machines had huge screens that could display a full page of Wysiwyg text along with a whole mess of icons. But our studies show that's overkill. One line of your document is plenty. That way you have room for all the buttons and controls you really need."

Why waste valuable screen space on your boring document?

"What if you want to see how the document will print?"

"We were thinking about including a preview mode. But then we realized that's old stuff from when printers were slow. You really want to see what your document's going to look like, you bite the bullet and print it out."

"Hey, one question. Just a thought. Can you get rid of all that extraneous stuff on the screen if you don't need it?"

"No problem. Click here, and the Document Porthole disappears. You get a whole extra line of custom icons."

"I love it! You guys think of everything." ◩

PHOTOGRAPH BY REX RYSTEDT

Mobile *Networked* Computing.

The Link All Other Portable PCs Are Missing.

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All The Resourc
On Th

SAFARI® NSX/20 NOTEBOOK COMPUTER

DOS/Windows and AT&T Mail loaded

"[Its] performance and user-friendly hardware and software features makes the Safari as close to perfection as you'll find today."
PC LapTop, December 91

Battery life of up to 6 hours

Enhanced Mobile Communications through optional LAN adapter or integrated modem

Ready to use out of the box

"[The NCR 3125] is an intriguing pen-based 'notepad' computer that is truly ahead of its time."
The New York Times, June 30, 1991

PC Computing MVP MOST VALUABLE PRODUCT 1991 NOMINEE

FORTUNE PRODUCT OF THE YEAR 1991

1991 BYTE AWARD OF DISTINCTION

Of Your Office. Road.

3120 NOTEBOOK

High-resolution screen

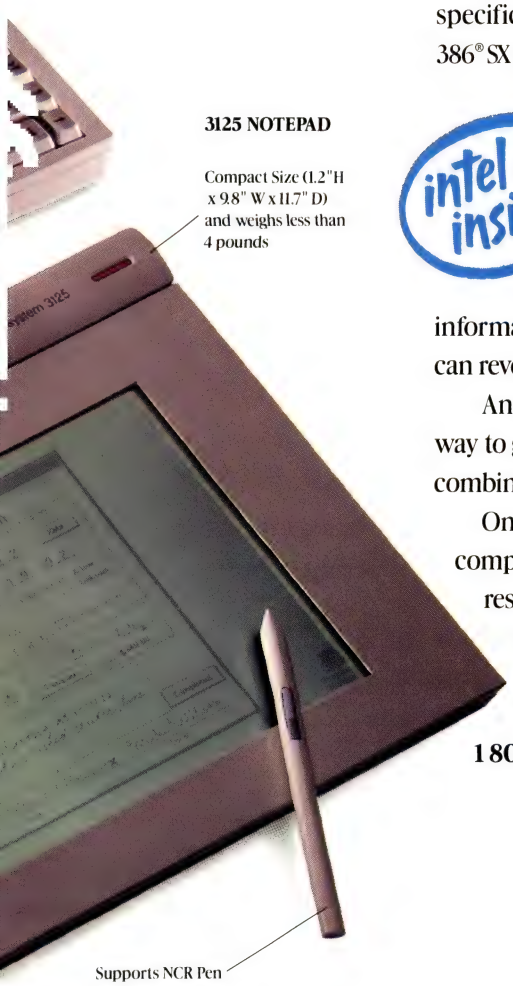
Weighs only 5.7 pounds

Compact Size (1.7"H x 11.7"W x 8.3" D)

Security—3 passwords accommodate three shifts of users

3125 NOTEPAD

Compact Size (1.2"H x 9.8" W x 11.7" D) and weighs less than 4 pounds

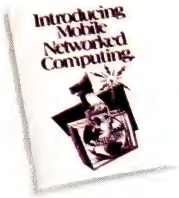


Supports NCR Pen DOS, as well as leading pen-based operating systems from GO Corp.™ and Microsoft™

NCR is Putting It All Together With a New Generation of Mobile PCs Designed for Advanced Communications.

Mobile Computing is no longer a luxury, it's a way of life. But you need more than just mobility, you need connectivity. And that's something portable PCs haven't been able to easily give you. Until now.

NCR has combined the industry's most innovative portable technology with AT&T's worldwide connectivity to provide a new level of mobile computing. It's called Mobile *Networked* Computing, and it lets you network from anywhere in the world to anywhere in the world. Only found in NCR's powerful new family of portable PCs, it's the link all others are missing.



With an integrated modem or LAN adapter, the Safari® NSX/20 Notebook Computer is the first notebook PC designed specifically for networking, while still providing portability, ease of use, and the 386® SX power to run most any application. Plus, the Safari comes complete with the software you need for wireless E-mail and other communications facilities, including AT&T's advanced EasyLink® service.

intel inside™

NCR has also taken leadership in the notepad market with the System 3125,™ a powerful pen-based computer which supports leading pen-based operating systems from GO Corp.™ and Microsoft.™ With its ability to automate handwritten forms, recognize graphic information and transmit it anywhere in the world via modem, the System 3125 can revolutionize the way your organization gathers and processes data.

And with our System 3120™ Notebook, there's never been a more affordable way to get your hands on the power of NCR. Weighing only 5.7 pounds, it's the ideal combination of power and portability in a low-cost notebook.

Only Mobile Networked Computing combines NCR's advanced mobile computing technology with AT&T's global communications to give you all the resources of your office while you're on the road. And we're continually building on this expertise to bring you innovations like enterprise-wide cellular data networks for the near future.

For a free brochure or your nearest NCR reseller or representative, call **1 800 CALL-NCR.** And find out how NCR is putting it all together.

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The Strategy For Managing Change.

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Circle 236 on reader service card.

New! BEST BETS

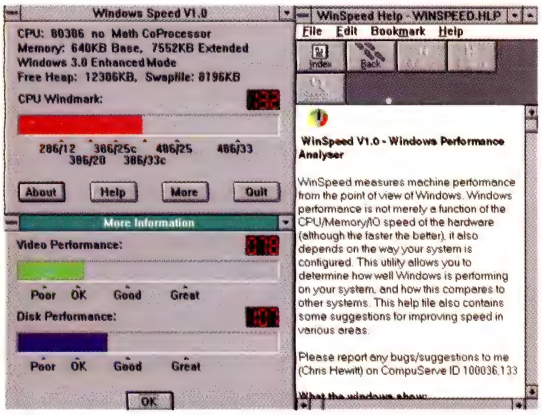
TOP DEALS FOR YOUR PC

BY PRESTON GRALLA

PC Contact

Free Windows Performance Tester

You may have a sense of how well your system performs under DOS, but how well does it handle Windows? How does your CPU stack up? And are your video system and hard disk up to Windows standards?



Guess no more. WinSpeed, a free Windows performance-measurement utility, will let you know. Simple visual displays show how your system handles Windows. It also offers tips on increasing performance. Win-Speed is available on PC/Contact, *PC/Computing*'s online forum, in data library 3, with the filename WINSPD.EXE. You can also get it as part of the *PC/Computing* Editors' Picks disk from Public Brand Software (see below for details).

Attention Shoppers! Great Deal on Color Scanner/Picture Publisher Combination

If you've wanted a color hand scanner but the price has been prohibitive, it may be time to open your wallet. Micrografx and Mustek (formerly Marstek) have come up with a great $795 combo package of Micrografx's new Picture Publisher image-editing software and Mustek's color hand scanner. Considering that Picture Publisher lists for $795 and the scanner lists for $699, it's a deal. The M-6000CG ColorArtist scanner works in 18-bit color, grayscale, and black-and-white modes. Call (800) 733-3729 for details. Order soon; the offer ends June 30th.

BEST SOFTWARE BUYS

Where can you get the best software deal? Usually through the mail. We surveyed mail-order houses for the best prices we could find. The following prices include shipping and handling charges but don't include credit-card surcharges. Prices are as of press time and are subject to change.

PRODUCT	LIST PRICE	BEST PRICE	SOURCE
DOS 5.0 upgrade	$99.95	$55.00	Fast Micro, (800) 441-FAST
Excel 3.0	$495.00	$279.00	Software Unlimited, (800) 926-7638
Lotus 1-2-3 3.1 Plus	$595.00	$389.00	Software Unlimited, (800) 926-7638
Microsoft Word 5.5	$450.00	$202.00	Software Add-Ons, (800) 822-8088
Norton Utilities 6.01	$179.00	$109.00	Fast Micro, (800) 441-FAST
QEMM 386 6.0	$99.95	$60.00	PC Zone, (800) 252-0286
Quattro Pro 3.0	$495.00	$279.00	Telemart, (800) 537-4735
Windows 3.0	$149.00	$69.00	Bulldog, (800) 438-6039
Word for Windows 2.0	$495.00	$292.00	Software Add-Ons, (800) 822-8088
WordPerfect 5.1	$495.00	$235.99	ET Valueline, (800) 395-1000
WordPerfect for Windows	$495.00	$256.00	Telemart, (800) 537-4735

Software Bundle for Small Businesses

People who own a small business or who want to start one should check out the Small Business Solutions bundle from Lotus, Logitech, and Granville Publications Software. For $89 you get Lotus's Ami 1.2 (that's Ami, not Ami Pro), Logitech's First Mouse, and Granville's Up Your Cash Flow Version 3.0 software. Up Your Cash Flow is designed to let businesspeople calculate what-if analyses to help their businesses grow. Call (800) 873-7789 for details.

PC Contact

PC/Computing Editors' Picks on Disk

Want to get the best of *PC/Computing*'s utilities and the shareware we write about every month? Well, you can—they're now available at $5 or less per disk (most disks have several utilities and programs on them) through Public Brand Software. Among the April picks are a BASIC program to change the color of your screen and text; financial planning spreadsheet templates; and the WinEZ Windows shareware program for enhancing your Windows setup. Also included—for free—is WinSpeed, a Windows performance-measurement utility detailed on this page. For more information, call Public Brand Software at (800) 426-3475 and ask for *PC/Computing*'s Editors' Picks for April. The same utilities and shareware programs are also available on PC/Contact, *PC/Computing*'s online service.

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Software Saleswire

Businessware

Feb	Jan	
1	1	**WORDPERFECT** (WordPerfect) This powerful word processor is easier than ever to use with pull-down menus and mouse support. IBM/compatibles, Windows, $495.
2	2	**LOTUS 1-2-3** (Lotus Development) Current releases improve print quality and allow for the use of many add-on products. IBM/compatibles: Release 2.3, $495; Release 3.1, $595; Macintosh, $495.
3	3	**WORD** (Microsoft) This word processor includes a spell-checker and thesaurus, graphics, and simple page-layout capabilities. IBM/compatibles, $450; Word for Windows, $495; Macintosh, $395.
4	5	**PARADOX** (Borland) A powerful, easy-to-use database with impressive presentation graphics. IBM/compatibles, $795.
5	8	**dBASE IV** (Borland) New features include improved installation and memory management. IBM/compatibles, $795.
6	4	**EXCEL** (Microsoft) This spreadsheet also has a fast database and outstanding graphics. IBM/compatibles (Windows), $495; Macintosh, $495.
7	7	**HARVARD GRAPHICS** (Software Publishing) Create business graphics and text presentations with advanced drawing tools and a 300-symbol library. IBM/compatibles, Windows, $595.
8	-	**QUATTRO PRO** (Borland) A spreadsheet with advanced publishing features that requires only 640K to run. IBM/compatibles, $495.
9	-	**Q&A** (Symantec) Database and word processing package for creating forms and reports for record tracking, inventory, and projects. IBM/compatibles, $399.
10	6	**GRAMMATIK IV** (Reference Software) An essential tool for checking grammar, spelling, style, usage, and punctuation. IBM/compatibles, Macintosh, $99.

In its various versions, Microsoft Word continues to hold its high position in the Businessware chart. Mastersoft's (602-277-0900) Windows Word for Word is an add-on utility that makes it easier to import or export documents from Word for Windows. Now in Version 5.0, the program provides conversion filters that operate transparently, retaining the format and layout of imported or exported files. Windows Word for Word supports more than 30 formats from A (Ami Professional) to X (XyWrite III Plus). Current users can upgrade for $39.95 plus shipping; the suggested retail price is $79.95.

Utilities

1	1	**MS-DOS 5.0** (Microsoft) A significant upgrade to the standard PC operating system. IBM/compatibles, $99.95.
2	3	**AFTER DARK** (Berkeley Systems) More than 30 screen-saver displays, some with sound. IBM/compatibles (Windows), Macintosh, $49.95.
3	2	**WINDOWS 3.0** (Microsoft) A graphical environment for running several applications simultaneously. IBM/compatibles, $149.
4	6	**DR DOS** (Digital Research) An operating system with a graphical interface, online help, file-transfer capabilities, and memory-management features. IBM/compatibles, $99.
5	8	**STACKER** (Stac Electronics) This program increases hard disk capacity and includes disk caching. IBM/compatibles: software only, $149; complete system with coprocessor card, $249.
6	4	**QEMM-386** (Quarterdeck) Expands the memory of 386 systems beyond the 640K barrier, speeding up large spreadsheets and CAD programs. IBM/compatibles, $99.95.
7	5	**PROCOMM PLUS** (DataStorm) The updated communications program features a text editor and more file-transfer protocols. IBM/compatibles, $129.
8	7	**NORTON UTILITIES ADVANCED** (Symantec) You can increase your PC's performance with features such as Quick Unerase, Disk Doctor, and Speed Disk. IBM/compatibles, Version 5.0, $179; Macintosh, $129.
9	10	**PC TOOLS 7.1** (Central Point) A collection of essential utilities, including virus protection and hard disk backup. IBM/compatibles, $179.
10	-	**NORTON DESKTOP FOR WINDOWS** (Symantec) A replacement for Windows' Program and File Managers that supports program, data-file, and disk-drive icons. IBM/compatibles, $149.

These software charts are compiled once each month by G. Meier, Inc., which gathers ranked-order sales information supplied by the following software industry sources: ABCO Distributors; American Software; Babbages; Compuadd; CompUSA; Corporate Software; Dustin Discount Software; Electronic Arts Distribution; Ingram-Micro; Kenfil; Merisel; Micro Warehouse; Multiple Zones; PC Connection; Soft Kat; Software Plus; Software Resource; Software Spectrum; Software, Etc.; and Waldensoftware. A weighting system is applied to each entry based on three factors: the entry's position in the individual chart, the power of the contributing source based on annual gross sales, and the relative strength of a source in a given category of software. All prices are suggested retail and are subject to change.

Homeware

Feb	Jan	
1	1	**QUICKEN** (Intuit) Accounting for home and small-business use. Newest version tracks investments and links to tax programs. IBM/compatibles, Macintosh, $59.95; Windows, $69.95.
2	2	**THE NEW PRINT SHOP** (Broderbund) Create greeting cards, wall-size posters, calendars, and letterheads. IBM/compatibles, $59.95; Apple II series, $49.95.
3	3	**TURBOTAX PERSONAL 1040** (ChipSoft) More than 50 IRS-approved tax forms. IBM/compatibles, $79.95; Windows, $99.95.
4	4	**AUTOMAP/THE INTELLIGENT ROAD ATLAS** (AutoMap) Plan the perfect trip with clear, detailed maps and driving instructions. IBM/compatibles, $99.95.
5	6	**KID PIX** (Broderbund) This paint program for children aged 3 to 12 combines special-effects art tools and sound effects. IBM/compatibles, Macintosh, $59.95.
6	7	**PRODIGY START-UP KIT** (Prodigy) Connect your computer via modem to stock reports, education, sports scores, movie reviews, news, weather, and more. IBM/compatibles, Macintosh, $49.95.
7	-	**ANDREW TOBIAS' TAXCUT** (MECA) A guide to tax preparation with a built-in auditor and more than 70 IRS-approved forms. IBM/compatibles, Windows, $59.95.
8	5	**WORKS 2.0** (Microsoft) Versatile program with word processing, spreadsheet, database, communications, and drawing programs. IBM/compatibles, $149; Windows, $199; Macintosh, $249.
9	8	**EXPERT HOME DESIGN** (SoftSync) Plan the layout of a house or room and choose from a library of 200 furniture shapes. IBM/compatibles, $14.95.
10	-	**EXPERT LANDSCAPE** (SoftSync) Plan a yard, patio, or garden with ease. Includes figures for trees, shrubs, ornaments, and fences. IBM/compatibles, $14.95.

Even with the tax season winding down, personal finances are always a concern to Homeware shoppers, as the continued popularity of Quicken demonstrates. One program that promises to help consumers take control of their financial future is Merit for Managing the Future from Merit Software Concepts (713-782-9974). This $129.95 program has users enter information on current and future income, financial goals and assets, and current benefit plans, all of which become part of a personal financial database. The program then calculates how much you should save to achieve your financial goals. It also has a goals and strategies component that lets you ask what-if questions about your financial future and identifies ways to accumulate assets.

Learnigware

1	1	**WHERE IN THE WORLD IS CARMEN SANDIEGO?** (Broderbund) Learn world geography, history, and culture in the original Carmen adventure. IBM/compatibles, Macintosh, $49.95; Apple II, $39.95; Commodore 64/128, $34.95.
2	4	**WHERE IN THE USA IS CARMEN SANDIEGO?** (Broderbund) Learn U.S. geography while following 16 suspects through all 50 states. IBM/compatibles, Macintosh, Amiga, $49.95; Apple II, $44.95; Commodore 64/128, $39.95.
3	3	**NEW MATH BLASTER PLUS** (Davidson) Children aged 6 to 12 are challenged with four new activities in this arcade-style math game. IBM/compatibles, $49.95; Macintosh, Windows, $59.95.
4	2	**WHERE IN AMERICA'S PAST IS CARMEN SANDIEGO?** (Broderbund) Follow Carmen through nine periods of America's past. IBM/compatibles, $59.95; School Edition, $69.95.
5	6	**READER RABBIT 2** (Learning Company) Develops reading skills, word recognition, and vocabulary for children aged 5 to 8. IBM/compatibles, $59.95.
6	-	**THE OREGON TRAIL** (MECC) Kids aged 5 and up plan a settler's journey across the rugged landscape of nineteenth-century America. IBM/compatibles, Macintosh, $49.95; Apple II, $39.95.
7	-	**MUTANOID MATH CHALLENGE** (Legacy) Using a crossword-puzzle format, children from ages 7 to 14 are challenged by the Mutanoids to solve basic math and pre-algebra equations. IBM/compatibles, $49.95.
8	-	**KNOWLEDGE ADVENTURE** (Knowledge Adventure) Chart your own course through history with this program's large database, which includes sounds and images. IBM/compatibles, $79.95.
9	-	**PC GLOBE** (PC Globe) Instant profiles of 190 countries and dependencies. Includes data on demographics, economics, climate, government, and travel. IBM/compatibles, $69.95.
10	8	**THE PLAYROOM** (Broderbund) A learning game combining reading, time-telling, keyboard use, and math skills for children 3 to 6. IBM/compatibles, $44.95; Macintosh, $49.95; Apple II series, $39.95.

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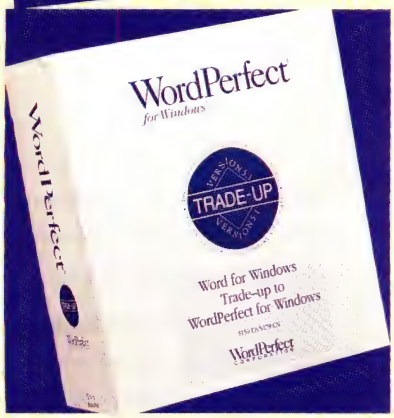

COMPETITIVE •TRADE-UP•

WordPerfect for Windows

$128

What's new in WordPerfect for Windows—a bunch! For starters, there's a new graphic interface and new WYSIWYG views. And now you can easily size and move graphics using your mouse. Dialog boxes make operation a breeze. Requires proof of ownership of qualified word processing program. WordPerfect Corp. #07009

WordPerfect for Windows 5.1 5.25" #09349 ..... $279
WordPerfect for Windows 5.1 3.5" #09340 ..... $279
WordPerfect for DOS 5.1 5.25" #08172 ..... $239
WordPerfect for DOS 5.1 3.5" #08557 ..... $239

WP Merge

$28

You don't have to worry about cumbersome and confusing control codes when performing mail merge in WordPerfect. WPMerge is just like an address book—all you do is enter names and phone numbers like you would normally (without any special formatting or control codes). It's memory resident and users can even share lists over a network! Performs search, edit, add and delete functions with intuitive ease.
First Access #07649

MODEM

Practical Pocket Modem

$109

This credit card-size modem gives you Hayes 2400 compatibility and all the advantages of 2400 bps data transmission. It draws its power from the RS232 port and the telephone line, so you never have to search for a wall outlet or change batteries! Practical Pheripherals #08957

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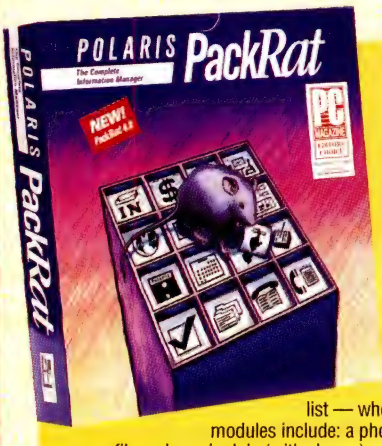

Packrat 4.0 for Windows

$254

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Business Essentials

Alpha Software
07476 Alpha Four 2.0 Comp. Upgr 94
07474 Alpha Four 2.0 348

Asymetrix Corp.
07434 Instant Database Win ..... 48 W

Borland International
08010 DBase IV 1.1 479
08019 Paradox 3.5 519
09383 Paradox 3.5 Comp Upgr 148
09869 Paradox Lan Pk Single Ntwk ... 199
09904 Paradox SE 65
07644 Quattro Pro 4.0 328
07646 Quattro Pro 4.0 Comp Upgr 88
09781 Quattro Pro SE V1.0 46

Fox Software
09611 Fox Pro 2.0 Single 458

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07416 Lang.Master DOS 201 44

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09557 Lotus Ami Pro 2.0 ..... 299 W
09723 Lotus Ami Pro 2.0 Comp Upgr .. 99 W
09476 Lotus 123 Rel 2.3 335
09526 Lotus 123 Rel 3.1+ 428
09669 Lotus 123 Win ..... 399 W
09674 Lotus 123 Win.Comp Upgr ..... 89 W
09670 Lotus 123 Win.Tech Guarnt ..... 49 W
09724 Lotus Double Up Upgrade 158

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09381 License Pak For Excel 3.0 ..... 269 W
08934 MS Excel 3.0 For Win ..... 298 W
07404 MS Word Win 2.0 Comp Upgr . 128 W
09974 MS Word for Win 2.0 ..... 309 W

Software Publishing
07077 PFS First Choice 3.1 85
08518 Officewriter 6.2 234

Spinnaker
08148 Professional Write 2.2 159
09370 Professional Write Plus ..... 168 W

Symantec
09392 Justwrite V1.0 For Win ..... 129 W
08919 Norton Editor 2.0 69

WordPerfect Corporation
09021 LetterPerfect 1.0 128
08172 WordPerfect 5.1 239
09217 WordPerfect 5.1 - 20 Pack 3300
09216 WordPerfect 5.1 - 5 Pack 1100
09349 WordPerfect 5.1 For Win ..... 279 W
07615 Wordperf.5.1 Add.Lic 20 pak 2948
07612 WordPerf.5.1 Add.Lic w/Doc .. 208
07611 WordPerf.5.1 Add.Lic w/o Doc 174
09681 WordPerf.5.1 Trade Up 139
09388 WordPerf.5.1 Upgrade 77
07009 WordPerf./Win Comp Trdup ... 128 W
07010 Wordperf./Wrdpft Win Trdup .... 79 W

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Cardinal
08283 1200 Baud Int. Modem 52
08284 2400 Baud Ext Modem 99
08285 2400 Baud Int Modem 78
09238 2400 Int W/ Sendfax 118
09239 2400MNP Ext Modem 172
08286 2400MNP Int Modem 129
09240 9600 V.32 Int Modem 438
09241 9600V.42BIS Ext Modem 478
09560 Modem V.42 2400Baud 184

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09158 Intel Satisfaxtion Fax Board 424

Prometheus
09242 Promodem24/96BSR FaxModem169
09923 Promodem 24/96SR+ Fax 234
08574 Promodem 2400 Mini 108
09309 Promodem 9600+Ext.Modem . 630
09310 Promodem Ultima 14.4 Modem634

Zoom Telephonics
09336 Modem FMC9624 24/96 SRFAX135
09332 Modem HC2400R Int 75

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Abacus
09046 Becker Tools For Windows ..... 79 W

Adobe Systems
09376 AdobeType Align for Win ..... 68 W
07319 Adobe Type Mgr 2.0/Win ..... 58 W

Addstor
09470 Superstor V1.3 Compres.SW ... 89

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09198 PicturEze 99
07598 Pizzazz Plus 3.0 68

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07199 Wired For Sound 25

Berkley Systems Design
09159 After Dark For Win ..... 28 W

Borland International
07206 Screenery For Win ..... 29 W

Central Point Software
07523 Central Point Backup 7.1 ..... 88 W
07107 Central Point Antivirus 1.1 78
08649 Copy II Pc 6.0 24
09865 PC Tools Deluxe 7.1 114
07013 PC Tools 7.1 w/Antivirus 154

Fifth Generation
08998 Disk Lock 1.0 122
07306 Pyro 2.0 33

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07177 Screencraze For Win ..... 32 W

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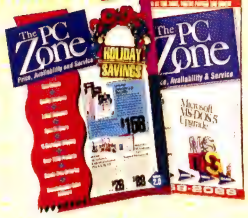

GRAPHICS

W = Windows Application

Adobe Systems
07478 Adobe Illustrator 4.0 ..... 422 W
Aldus Corp.
09432 Persuasion 2.0 for Win ..... 329 W
07214 Freehand 3.0 For Win ..... 388 W
Asymetrix Corp.
07435 Make Your Point Win ..... 48 W
Banner Blue Software
09786 Org Plus Adv. 6.0 67
Borland
09915 Applause II 1.5 79
Bourbaki
07171 Fractunes 2.0 49
07168 Fraczooms 1.0 33
Computer Support Corp
09050 Arts & Letters Graph Ed 3.1 365
08292 Dream House Professional 46
Corel Systems
08642 Corel Draw 2.0 ..... 368 W
IDC Computer
09889 Icon Designer 2.0 ..... 33 W
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07163 Freelance For Win ..... 348 W
07430 Freelance For Win Upgrade ..... 99 W
09528 Freelance Graphics 4.0 329
09892 Lotus Freelance 4 Comp Upgr ... 89

Micrografx
08308 Charisma For Win ..... 339 W
07225 Windows Draw ..... 109 W
07622 Designer 3.1 w/ATM 2.0&ATA 459 W
09350 New Wave Charisma ..... 323 W
07223 Picture Publisher Plus Win ..... 489 W
Microsoft Corporation
08198 Powerpoint for Win ..... 315 W
07209 Powerpoint for Win Comp Upgr119 W
New Vision Technology
09497 Presentation Task Force ..... 125 W
Postcraft International
07254 Layouts-Stationary Pack A 34
07253 Layouts-Stationary Pack B 34
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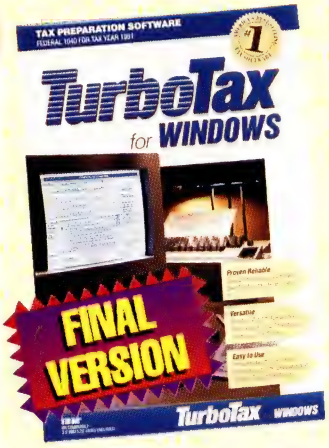
09390 Harvard Geographics 265
08144 Harvard Graphics 2.3 329
09584 Harvard Graphics 3.0 399
09586 Harvard Graphics 3.0 Node 399
Spinnaker
08155 Splash 22
Symsoft Corp.
09019 Hot Shot Graphics V1.7 164
WordPerfect Corp.
08175 DrawPerfect 1.1 268



TurboTax for Windows

$58

TurboTax for Windows is America's best-selling PC tax preparation software. It quickly and easily guides you to the forms you need and walks you through the tax preparation process. Prints out your return ready to mail to Uncle Sam. Chipsoft #07228

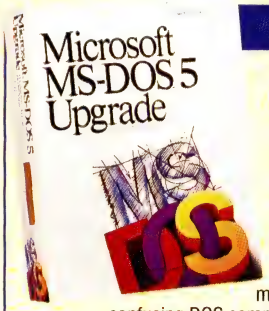
Turbo Tax for DOS #07129 ..... $49
Turbo Tax/Quicken Bundle for DOS #07179 ..... $69
Turbo Tax/Quicken Bundle for Windows #07180 ..... $69

PROJECT MGT.

Asymetrix Corp.
07423 Daybook + For Win ..... 38 W
Auto Map Inc.
09514 Automap Road Atlas 51
Chronologic Corp.
08289 Instant Recall 1.2 62
Contact Managment S/W
09505 Biz Base 2.1 Gold 204
09504 Biz Base 2.1 Personal 39
Contact Software Int.
07120 1St Act! 54
07109 Act! 2.1 228
DB Allen
09689 Daily Plan-It! 59
Deca Ventures
08846 Manager's Organize 139
Derrill & Bryan
08593 Info Spotter 48
Micrologic
09607 Info Select V2.0 94
Microsoft Corporation
07610 Project V. 3.0 For Win ..... 449 W
Okna Corporation
08647 The Desktop Set For Win ..... 84 W
Polaris Software
07008 Packrat 4.0 For Win ..... 254 W
Prisma Software
08872 Yourway For Win ..... 148 W
Softnet Communications Inc.
07425 Maximizer Memory Manager 34
Software Publishing
08517 Harvard Project Manager 3.01 469
SuperOffice Corp
07420 SuperOffice Win Single ..... 224 W
07421 SuperOffice Win 5 Pack 1048
07422 SuperOffice Win 10 Pack ..... 1589 W
Symantec
08157 Grandview 2.0 195
09396 On Target V1.0 For Win ..... 254 W
07117 Timeline 5.0 465
WordPerfect Corporation
08171 Planperfect 5.1 249

HARDWARE

ATI
07188 ATI 8514/Ultra W/1MG 558
09900 ATI VGA WnderExcelw/Mse 198
Canon
09735 BJ-10EX Bub Jet Printer Bk 324
07159 LBP 4Plus Laser Printer 999
07173 LBP-8Plus Laser Printer 1599
Colorado
07311 Jumbo 120 TapeBackUp DJ10 224
09823 Jumbo 250 TapeBackUp DJ20 288
NEC
07632 CDR 38M XTAT Ext. 589
07633 CDR36M XTAT Port CD-ROM 458
07634 CDR73M XTAT Ext. CD-ROM 648
Star
07482 NX1001 9 Pin DotMatrix Prntr 158
07483 NX2420 24Pin Dot Matrix Prntr 324
07484 StarJet SJ-48 Ink Jet Printer 344



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Finally, a user-friendly DOS! The new DOS 5.0 upgrade will change the way you feel about your PC. Optional drop-down menus make file management easy—no more confusing DOS commands to memorize! It even uses less memory than previous versions (on 80286 or higher systems). Microsoft Corp. #09261

Microsoft Corp. • **#09261** for 5.25" disks. • **#09260** for 3.5" disks

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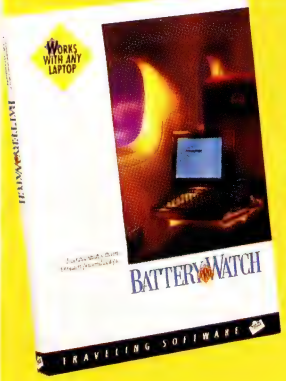
Sound Blaster Pro

$188

Sound Blaster produces authentic-sounding instruments, even when compared to expensive commercial synthesizers. And since it's AdLib compatible, your Sound Blaster will have the largest collection of supporting software from day 1. Creative Lab, Inc. #09919



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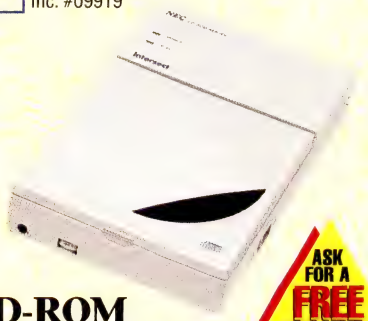

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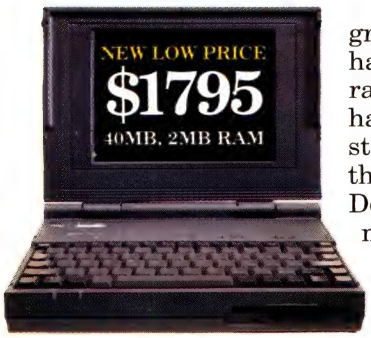

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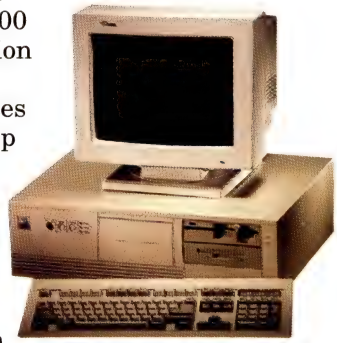

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WORDPERFECT

Harness the power of WordPerfect 5.1 with these shortcuts and macros

WordPerfect 5.1—whether for DOS or for Windows—is a powerful program, yet its power cuts two ways. Some of its many features invariably get hidden beneath layers of menus, but the program lets you customize those otherwise obscure features so that they're available with the touch of a key. And it has plenty of built-in shortcuts for tapping its power, but you need to know what they are.

We've taken a close look at the new WordPerfect 5.1 for Windows to find out where its secrets lie. We've also looked back at many of the WordPerfect 5.1 for DOS secrets we uncovered in the past and added several dozen new ones that work with both the DOS and Windows versions.

If you find either version of WordPerfect formidable, try these tricks to tame it. If you're an experienced user, this guide will expand your mastery of this program.

All of the macros in this article are available from *PC/Computing*'s CompuServe forum, PC/Contact. In data library 2 (Templates/Macros), the file WPTIPD.EXE contains DOS tips, and the file WPTIPW.EXE contains Windows tips.

Ruler Tricks

WRITTEN & COMPILED BY RON WHITE

SETUP

1. Speed up Windows _____ WIN

The most common complaint about WordPerfect for Windows from longtime users of the DOS version is that the Windows program is decidedly slower. These tips improve the performance of WordPerfect for Windows (and in some instances all of your Windows programs).

• Run Windows in Standard mode by launching it with the command WIN/2 or WIN/S. In Standard mode, you can't use your disk for virtual memory or run DOS applications in the background, but you can still switch from Windows apps to DOS programs.

• Add memory to your PC. With less than 4MB of RAM, WordPerfect for Windows is painfully slow. The more memory you install, the better.

• If you're running at Super VGA resolution, drop down to a lower resolution. And use 16-color mode instead of 256 colors. Not only do you have a better chance of avoiding the 256-color bug (a problem with some 256-color drivers that causes Unrecoverable Application Errors) but WordPerfect for Windows also runs faster because it has less information to manipulate. A video adapter that includes a Windows speed-up chip will also help dramatically.

• Use a disk cache. SmartDrive, the one supplied with Windows, will do, but the best cache you can get is Multisoft's Super PC-Kwik (800-234-KWIK). Also, defragment your hard drive, and, if you run Windows in 386 Enhanced mode, use a permanent swap file. To create a permanent swap file, run Windows in Real mode (WIN/R), click on Program Manager's File menu, choose Run, and type SWAPFILE at the prompt. The Swapfile program will tell you how much of your disk is available for a permanent swap file. Try to devote at least 4MB to it if you can spare the space, and more than that if you can.

• Choose File, Preferences, Display, turn off Display Columns Side by Side, and turn on Graphics in Black and White. Under the View menu, uncheck the Graphics option.

• When printing, use WordPerfect's own printer drivers rather than those supplied with Windows. WordPerfect's drivers are appreciably faster. Currently, however, some scalable font packages such as Adobe Type Manager work only with the Windows printer drivers. But other third-party font companies, such as LaserTools, have produced versions of their products for WordPerfect for Windows.

• To access File Manager, the spell-checker, and the thesaurus faster, run them minimized.

2. Let expanded memory speed response _ DOS

WordPerfect for DOS already uses expanded memory for temporary files to enhance its performance. If a document won't fit into conventional memory, it moves as much of it as it can into expanded memory and the rest into overflow files on the hard drive. But if you've already set up your expanded memory or extended memory as a RAM drive, redirect the overflow files to it by starting WordPerfect with the command WP /D-*x*:, where *x*: is the RAM drive.

WordPerfect 5.1 for DOS can also use expanded memory to store up to 592K of menus, overlays, and error messages. By moving these parts of WordPerfect to memory, you'll get quicker response when WordPerfect needs one of the files. Instead of reading the hard drive, WordPerfect finds the files already in memory. Add /W=*,* /R to your startup command (WP /W=*,* /R) to move the files into expanded memory.

You can further improve several auxiliary features by storing a number of files in a RAM drive: the main dictionary (WP{WP}US.LEX, WP{WP}.SPW), the thesaurus (WP{WP}US.THS), the hyphenation file (WP{WP}US.HYC), your supplemental dictionary (WP{WP}US.SUP), macro files (*.WPM), and printer definition files (*.PRS). These will take up about 690K of your RAM disk, with about another 100K needed for overflow files. Change the location of your auxiliary files in WordPerfect's Setup menu to point to the RAM drive, and WordPerfect will give you immediate access to them. Do not put your automatic backup files on the RAM drive. If you lose power, your backup files will disappear, too.

Turn off the side-by-side column display option. Select Setup (Shift-F1), Display (2), Edit Screen Options (6), Side-by-side Columns Display (7), No (N).

3. Save system resources _____ WIN

A common problem with WordPerfect for Windows is reduced system resources. System resources consist of two 64K areas of memory that are used by any Windows 3.0 applications. When system resources run low, they can be insufficient to launch new applications. (To determine the state of your system resources, open Program Manager, and click on Help and About. System resources are expressed as a percentage of total available resources.)

In Windows 3.0, system resources are often used inefficiently by applications and by Windows itself. Win-

---

Executive Editor Ron White is the author of *PC/Computing WordPerfect for Windows Techniques and Utilities*, to be published by Ziff-Davis Press in May with a disk of macros and keyboard and Button Bar layouts. Other tips were contributed by William Beem, George Beinhorn, Jerome Coffey, John Edwards, Mike Falkner, Judy Housman, Matthew Lake, Scott McGrath, Jack Nimersheim, Charles Olsen, Derrick Shadel, Ed Stills, and Richard R. Tolman.

dows 3.1 may correct some of the problems, but even with Version 3.0, you can preserve more system resources by following these tips.

Run Program Manager with as few group icons open as possible. Each open icon consumes system resources—and worse, doesn't restore system resources when it's closed.

WordPerfect for Windows itself consumes about 18 percent of system resources, and some of its features consume more. If you find yourself running short of resources and can spare the following features, turn them off: ruler (5 percent), Button Bar (3 percent), macro facility (3 percent), spell-checker (5 percent), thesaurus (3 percent), File Manager (10 percent). (You'll have to exit Windows and reload it after making these changes to be sure the resources are freed.)

4. Enhance onscreen text readability _____ WIN

If the font and display you're using in WordPerfect for Windows produce onscreen text that's too small to read easily, here's a workaround. This works best if your main body text is mostly 12-point Times Roman or a similar font and if you normally use 1-inch margins on the left and right.

Go to the top of the document and change margins to 0.5 inches on both the left and right. Now select 14-point Helvetica type. The font displayed onscreen is readable, and the lines break approximately where they will when you remove these temporary codes and restore 1-inch margins with 12-point type for final printing.

To make the process easier, create a couple of macros—one to insert the temporary codes and one to remove them—and assign both to your Button Bar or to the Macro menu.

5. Get semi-Wysiwyg in DOS _____ DOS

Get many of the benefits of Wysiwyg display in WordPerfect for DOS by using ScreenExtender. This $99.95 program from Stairway Software (800-782-4792) takes over the screen functions of WordPerfect for DOS. WordPerfect's Very Large attribute makes text appear very large. Underlined, italicized type is both underlined and italicized. Superscript and subscript display above and below the line. ScreenExtender doesn't always display typefaces correctly, so you must choose from Sans Serif, Roman, and Gothic. But all the typefaces are very readable. ScreenExtender also lets you display up to 133 columns of text, depending on your monitor.

6. Use menus without mice _____ DOS

You don't need a mouse to take advantage of WordPerfect for DOS's pull-down menu, which can be enhanced with a few changes in your Setup.

Choose Setup (Shift-F1), Display (2), Menu Options (4), and then change each of the following options to Yes:

- Alt Key Selects Pull-Down Menu
- Menu Bar Separator Line
- Menu Bar Remains Visible

The new main menu will be visible but separated from the text. Hitting an Alt key activates the menu's functions.

FORMATTING TEXT

7. Globally change footnotes _____ DOS/WIN

You can include separate margins and font codes in any footnote or endnote you create, but if you want the style for any of these to be different from your main body text, it's a hassle to set margins and fonts for individual footnotes or endnotes. And the Options menus in WordPerfect for Windows and for DOS don't set margins and fonts that apply to all footnotes and endnotes.

The solution is to use the Document Initial Codes and Initial Font settings. These are different from the Initial Codes setting found under File, Preferences and from the Initial Font setting established with the Printer Setup. Document Initial Codes and Initial Font settings apply only to the individual document you're working with as you make the settings.

To set a document's Initial Codes in WordPerfect for Windows, choose Layout, Document, Initial Codes. In DOS, press Setup (Shift-F1), Initial Settings (4), and Initial Codes (5). Enter any codes you want to apply to the entire document and your footnotes and endnotes. To set a document's Initial Font in the Windows version, choose Layout, Document, Initial Code, and select a font from the list box that appears. In DOS press

TIP 6 By making the correct changes in the Menu Options screen of the Setup feature of WordPerfect for DOS, you can pop-up its menus at any time simply by tapping either of the Alt keys even if you don't use a mouse.

Format (Shift-F8), Document (3), Initial Base Font (3), and select a font from the list that appears.

If you want your main body text to be different from your footnote/endnote text after you've saved those settings, include any formatting and font instructions at the beginning of the document. But any time you create footnotes or endnotes, the formatting in the Initial Codes and Initial Font settings will apply to the notes. The same technique can be applied to headers and footers.

8. Delete formatting codes _____ WIN

If you find that deletion keystrokes skip over formatting codes you want to delete in WordPerfect for Windows, there are two solutions. The first is to choose File, Preferences, Environment and check the box labeled Confirm on Code Deletion. When this box is checked, a confirmation box appears any time a deletion keystroke would remove a code. When Confirm on Code Deletion is unchecked, deletion keystrokes skip over codes entirely. Another solution is to open the Reveal Codes window. Then deletion keys will zap codes as well as regular text.

9. Create great-looking pull-quotes _____ DOS

Spice up your WordPerfect for DOS desktop publishing documents by using pull-quotes—quotations lifted from the main body text and set off in large type. Before defining the first pull-quote, you must set the text box options by pressing Graphics (Alt-F9), Text Box (3), Options (4). Set the Border Style (1) to Left: None; Right: None; Top: Thick; Bottom: Thick. Set the Outside Border Space (2) to .167 inch on all sides, and the Inside Border Space (3) to 0 inches on all sides.

To create a pull-quote, use Block (Alt-F4) to select the text you want to quote, then press Move (Ctrl-F4), Block (1), Copy (2). Now press Graphics (Alt-F9), Text Box (3), Create (1) to bring up the Text Box Definition screen. Set the Anchor Type (4) to Page, set Size (7) to 2.75 inches wide with auto height, and set Wrap Text Around Box (8) to Yes. Then press Edit (9), Enter to retrieve the text you just copied. Put the cursor at the beginning of the text and set the font and size, and then press Exit (F7) to get back to the Box Definition screen.

Setting the vertical and horizontal positions can be tricky, especially if you're using a multicolumn layout. Try a vertical position of 4 inches and a horizontal position of 3 inches, for instance—and then use Print Preview (Shift-F7, 6) to check the results and adjust the settings until you like what you see.

10. Set custom line spacing _____ DOS/WIN

Both versions of WordPerfect include a Fixed Line Height command that lets you set vertical spacing for sections of your document with much greater control than traditional word processors do. For example, you can use the following sequences to set vertical spacing to ¼ inch:

In WordPerfect for DOS, press Format (Shift-F8). Select Line (1), Line Height (4), Fixed (2) and fill in .25 inch. Press Exit (F7) twice to return to the edit screen.

In the Windows version, choose Layout, Line, Height, click the Fixed radio button, and fill in the measurement. Then choose OK to save the setting.

The measurement you enter represents the baseline-to-baseline distance between lines. The baseline is an imaginary line that marks the bottom of letters, excluding descenders.

11. Align type _____ DOS

WordPerfect for DOS may become annoying when you're trying to line up text. Characters can appear to be aligned on the screen but not when you print. Two options help you cope with misalignment.

First, go to the Setup screen (Shift-F1), press Environment (3), and select Units of Measure (8). Choose inches (") for the main display and the status line. This setting lets you judge the absolute position of a character by reviewing the status line while cursoring up and down—a must when you're using more than one font.

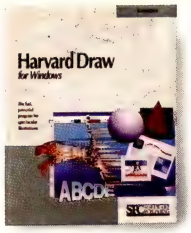
Second, when you need to line up words but don't want to use columns, use left tabs to line up text to the left of the first character. All default tabs are left-aligned. Also, don't forget that right tabs make text line up to the right of the last character and that decimal tabs can use any character as the one around which text lines up. Tabs can be set using Format (Shift-F8), Line (1), Tab Set (8), and then placing an R for right-aligned or D for decimal at the appropriate tab settings.

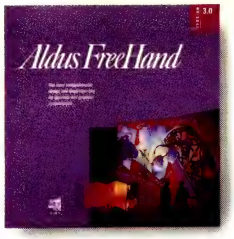
12. Adjust to Auto Code Placement _____ WIN

WordPerfect for Windows has a feature not found in the DOS version that may throw longtime WordPerfect users for a loop. The feature is Auto Code Placement, which puts formatting codes at the beginning of pages, lines, and paragraphs where appropriate.

This can, however, cause confusion for users who've developed their own shortcuts. For example, DOS WordPerfect users may employ the trick of entering a header code somewhere below the top of a document's first page, knowing that the header won't print out until the second page. This way you can avoid having to enter the commands to suppress the header on the first page.

Auto Code Placement, however, spoils the trick by automatically placing the header code at the top of the page. If you find that your headers are printing on the first page when you don't expect them to, either suppress them manually or turn off Auto Code Placement. To turn it off, choose File, Preferences, Environment and uncheck the Auto Code Placement box.





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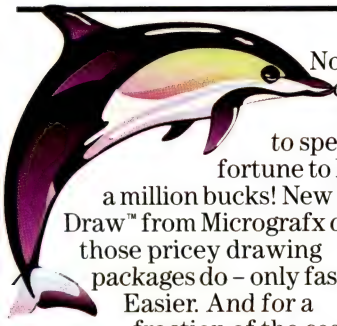

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13. Update document settings _____ DOS/WIN

If you change your Initial Codes—which WordPerfect for DOS and for Windows use to contain your default settings—you can easily update the settings for an old document by retrieving it into a blank screen into which you have typed only a space or return. The new Initial Codes are part of the new, nearly blank document, and retrieving the old document into the new one strips out the old document's initial codes and uses only its text and inline formatting. If necessary, you can delete the initial space or return and then save the old document under its original name. But note that this also removes any document summary the original file may have had.

14. Speed the font-attribute switch __ DOS/WIN

You can switch font attributes quickly in both versions of WordPerfect by using the right arrow key to end the attribute. When you apply an attribute (Ctrl-F8), WordPerfect actually enters a pair of attributes—one for "on" and one for "off"—but leaves your cursor between them. After typing whatever text you want in that attribute, press the right arrow key to jump over the "off" attribute code, and you're back in normal type.

15. Space tab settings evenly _____ DOS

Use this tip to produce evenly spaced tabs in WordPerfect for DOS. First, clear the existing tabs at the Tab Set menu by pressing Format (Shift-F8), Line (1), Tab Set (8), and Delete to End of Line (Ctrl-End).

Then, indicate the type of tab you want to replicate by creating a sample tab. To do this, enter the position number and press Enter. For example, type 1 for a tab at one inch, 0.5 for a tab at one-half inch). Then type a C (centers text around the tab stop), a D (aligns numbers at the decimal point), or an R (aligns the right edge of text). For left-aligned tabs, skip this last step.

Enter the position of the first tab stop, then a comma, then the increment of space between tabs (1 for one inch, 0.5 for a half inch); press Exit (F7). WordPerfect immediately replicates the first tab type at the designated interval.

16. Capitalize initial letters with a macro __ DOS

WordPerfect for DOS's Switch key (Shift-F3) makes words all uppercase or lowercase if you press it while the words are blocked. But often you want only the first letter of each word to be capitalized. Here's a handy macro that will do just that.

Begin recording the macro by pressing Define Macro (Ctrl-F10). At the Define Macro: prompt, type Alt-P or any Alt-*key* combination of your choice; at the Description: prompt, type Initial Caps. First, record Ctrl–right arrow, Ctrl–left arrow, then Alt-F4 or F12 (both are Block keys), and Ctrl–right arrow. These keystrokes move the cursor to the first letter of the word on which it rests and block the entire word.

Now press Convert Case (Shift-F3), Lowercase (2) to make the whole word lowercase, followed by Ctrl–left arrow, Alt-F4 or F12, right arrow, Shift-F3, and Uppercase (1) to capitalize the first letter. Press Ctrl–right arrow, which will take the cursor to the beginning of the next word, and press Ctrl-F10 to finish recording the macro. To give several words initial caps, use Esc, WordPerfect for DOS's Repeat key. Press Esc, type the number of words you wish to have in initial-cap format, and invoke the macro by typing Alt-P.

17. Use dot leaders _____ DOS/WIN

When creating a two-column table of contents, an invoice, or a similar listing in WordPerfect for DOS or for Windows, use dot leaders to link the left column to the right. The quickest way to do this is to type the left column and press Flush Right (Alt-F6) twice. WordPerfect fills the line with dots, and as you enter the right column of data, it remains aligned to the right margin without wrapping.

18. Prevent words from wrapping __ DOS/WIN

Here's a trick to make sure words that belong together, such as names and titles, print on the same line in WordPerfect for DOS or for Windows.

Press and release the Home key before you press the space bar that separates the words. This method works in the Windows version only if you're using the WP51 keyboard, but in WordPerfect for Windows you can also press Ctrl-space. Unless you replace the nonbreaking space, the words will always appear on the same line. It's so simple you might not think you've done it right. To check, press Alt-F3 in the DOS version or choose View, Reveal Codes in the Windows version. You'll see the space enclosed by brackets.

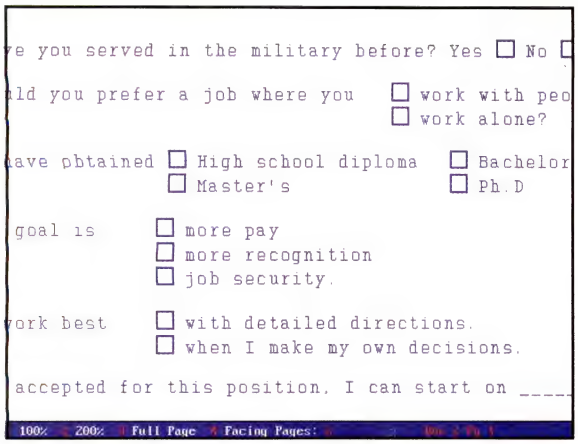
GRAPHICS

19. Include graphics in a style _____ DOS/WIN

If you frequently use a combination of text and graphics in either version of WordPerfect—for example, a letterhead—include both in a style and apply the style any time you want the text and graphics to appear.

20. Create check boxes in Windows _____ WIN

Create small check boxes for forms in WordPerfect for Windows. Create an empty figure box anchored to a character and then size it with the mouse or the menus. A box size of 0.25 inch by 0.25 inch is handy for most forms. You can put the box into a style or a macro to insert it easily into new documents.



TIP 21 Spruce up your forms and questionnaires by adding check boxes, which are actually blank figure boxes that have been sized to match your type and anchored to a character in the text of your document.

21. Make DOS check boxes _____ DOS

If you're using WordPerfect for DOS to create forms with check boxes, use the Graphics feature to create the boxes. Press Graphics (Alt-F9), Figure (1), Create (1). Set the Anchor Type (4) to Character (3), the Vertical Position (5) to Bottom (3), and both the Width and the Height to .15 inch. Press F7 to exit this screen, and the box will be set. You won't see the box on screen; WordPerfect will simply display a solid block. But you can see it by using Print, View Document (Shift-F7, 6). Experiment with different box sizes. Once you've determined the size you like, create a macro to automate the process.

22. Box your page _____ DOS/WIN

To create a box around entire pages in both versions of WordPerfect, put a full-page figure box in a header. Turn off Wrap Text Around Box so your text will be contained inside the box. You may need to adjust the margins so the text will align correctly within the box.

23. Underline for emphasis _____ WIN

Underline a heading for emphasis. Position the insertion point at the beginning of the heading; choose Graphics, Line, Horizontal; and click OK when the Create Horizontal Line dialog box appears. Click on the line and use its handles to change its thickness, length, or position.

CLICKY MOUSE TRICKS

24. Double-click to display dialog boxes ___ WIN

A shortcut to displaying dialog boxes in WordPerfect for Windows is to double-click any of the ruler buttons. This brings up the associated dialog box and eliminates the need to keep similar buttons on your Button Bar.

25. Select text easily _____ DOS/WIN

If you use a mouse with WordPerfect for DOS, you can select text by holding the left button as you drag the cursor over the text you want to block. WordPerfect for Windows adds the following text selection shortcuts:

With the insertion point on a word, quickly double-click the left mouse button to select it. Click the mouse quickly three times to select a sentence; hold the Shift key down while clicking this to select the current word to the end of a sentence. Click the mouse four times quickly to select a paragraph; hold the Shift key down while clicking to select from the current word to the end of a paragraph. Click once at a start point, press Shift, and click at another point to select the text between the two points. Or click and drag the cursor between two points to select text.

RULER TIPS

26. Move tabs en masse _____ WIN

Move or copy several tabs at once in WordPerfect for Windows by using the mouse and the ruler. First, use the mouse to select a group of tab markers in the ruler. Be sure to start by positioning the mouse pointer between two tab markers; if you start with it on a tab marker, you will simply move that one marker.

Now click and drag the pointer across all the tabs you want to work with. A shaded area will cover all those markers. Release the left button and position the arrow anywhere in the gray area. Now click and drag the shaded area to the location on the ruler where you want to position the tabs.

Ordinarily this simply moves the tab markers without affecting any other markers. But if you hold the Shift key while moving the shaded area, the shaded tabs will replace any tabs in the area you move them to. If you hold down the Ctrl key while moving the shaded tabs, they are copied to a new area without affecting any existing tabs. But if you hold down Ctrl and Shift, the shaded tabs are copied and replace any existing tabs the shaded area is moved to.

You can delete an entire series of tabs by shading them and dragging them below the ruler.

27. Undo margins quickly _____ WIN

Using the ruler in WordPerfect for Windows is the easiest way to change your margins. Simply click and drag either of the margin markers. But if you change your

mind in the middle of the process, drag the mouse pointer above the ruler to the top of the screen and release the button. The margin marker will return to its original position.

28. Control column gutters _____ **WIN**

The ruler in WordPerfect for Windows gives you easy control of the size and number of columns. To change the size of the gutter—the white space—between columns, click and drag either of the two triangles that indicate the edges of the gutter. To move the position of the gutter—which effectively changes the width of the column, click and drag anywhere in the shaded area between the two markers. To delete a margin entirely, which reduces the number of columns, click and drag the shaded area below the ruler.

BUTTON BAR TIPS

29. Display more buttons _____ **WIN**

If you find yourself running out of space for buttons on WordPerfect for Windows' Button Bar, choose View, Button Bar Setup, Options and select Text Only and Left or Right. This displays the Button Bar on the left or right side of the screen without the icons, which allows you to display twice as many buttons.

30. Switch Button Bars _____ **WIN**

If you still find yourself running out of room to display all the WordPerfect for Windows buttons you'd like, create separate button collections for separate tasks—for example, create a set for ordinary editing and a set for mail merge. Now include on each of the bars a button that switches to the other set.

First, create two macros, each of which sets up one of the Button Bars. Choose Macro, Record and give the macro a name that will identify the appropriate Button Bar, because the macro's name will be used on the button when you later add the macro to the bar.

With the Macro Facility running, click View, Button Bar Setup, Select and choose the appropriate Button Bar set. Then stop the macro recording.

Because you can't assign a macro to a Button Bar until it's been compiled, replay the macro you just recorded by selecting Macro, Run and the name of the macro. The Button Bar associated with that macro will appear on the screen.

Now use View, Button Bar Setup, Select to choose your other Button Bar—the one to which you want to assign this macro. Then choose View, Button Bar Setup, Edit, Assign Macro to Button. Finally, choose the macro that you just recorded from the list box and choose Assign.

Repeat the process for your other Button Bar. If you have more than two Button Bars, you can create as many buttons as you need on each of them to display any of the other Button Bars.

MACROS

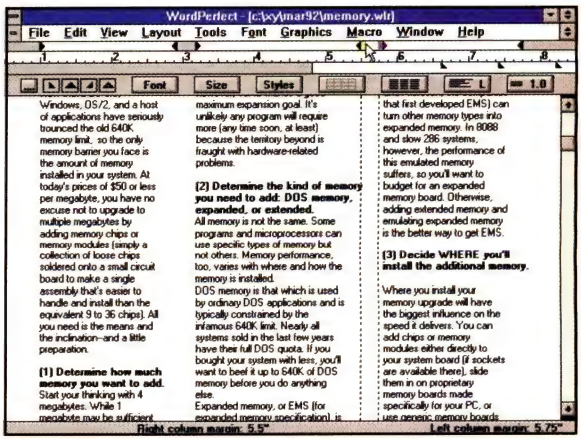
The following macros are available on PC/Contact, *PC/Computing*'s online forum. Download WPTIPD.EXE for DOS and WPTIPW.EXE for Windows, both in data library 2 (Templates/Macros). PC/Contact

31. Assign macro keys on the fly _____ **WIN**

WordPerfect for Windows allows you to assign macros to Ctrl-*key* and Ctrl-Shift-*key* combinations by using the Keyboard Editor, which you access by choosing File, Preferences, Keyboard. But there's an easier way to assign macros to those keystroke combinations.

When you begin to record a macro and WordPerfect wants you to name the macro in the Record Macro dialog box, press the Ctrl-*key* or Ctrl-Shift-*key* combination for that macro. WordPerfect will automatically insert a name for the macro based on the key combination. For example, pressing Ctrl-E inserts the macro name CTRLE.WCM. Pressing Ctrl-Shift-E inserts the name CTRLSFTE.WCM.

Macros named this way can be used without first being assigned to a specific keyboard layout. If, however, you're using a keyboard layout that already has macro or WordPerfect commands assigned to a specific Ctrl-



TIP 28 The simple way to size columns and gutters is to click and drag on the ruler's triangles, which mark the edges of the columns. Note the dashed line that extends down through the document to help you adjust alignments.

key or Ctrl-Shift-*key* combination, that assignment overrides the macro with the matching name.

32. Run macros automatically _____ DOS/WIN

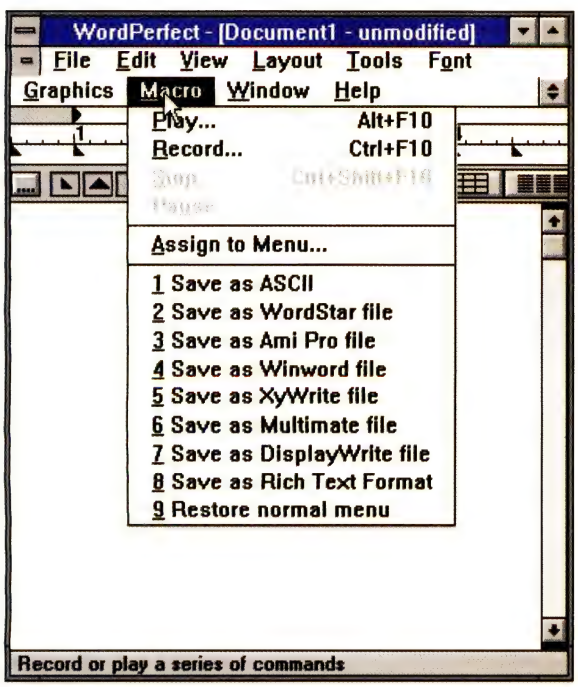
Here's a way to make WordPerfect for Windows automatically run a macro to display the Open File dialog box or for the DOS version to list files each time you launch either program. You can adapt these tips to make WordPerfect run any other macro when it's loaded.

In WordPerfect for Windows, the macro to display the Open File dialog box consists of two lines:

```
Application (WP;WPWP;Default)
FileOpenDlg ()
```

Type these lines in a new document and save it with a name such as OPENFILE.WCM.

Now save your work and close WordPerfect. Open the group in the Windows Program Manager that contains WordPerfect for Windows, and highlight WordPerfect's icon by clicking on it once. Then use the mouse to select File, Properties from the Program Manager. Tab to the text box labeled Command Line. Press the End key to move to the right of WPWIN.EXE. Press the space bar once and type /M-OPENFILE. (If your macro is called something other than OPENFILE.WCM, use that name instead.) You don't have to include the file extension. Click on OK. Now launch WordPerfect for Windows by double-clicking on its icon. WordPerfect will display the Open File dialog box as soon as it's loaded.



TIP 33 You can assign up to nine macros at a time to WordPerfect for Windows' Macro menu. Make one of them a macro that lets you assign different sets of macros to the menu for use with different word processing tasks.

In the DOS version, create a macro to list files by pressing Macro Define (Ctrl-F10) and giving the macro a name such as LISTFILE and a description. Then press List Files (F5), Enter. While the List File screen is displayed, press Macro Define again.

Now create a batch file called WPLIST.BAT to launch WordPerfect for DOS. It should contain one line:

```
C:\WP51\WP /M-LISTFILE
```

Put the batch file in a directory on your path. If the directory that contains WordPerfect for DOS is not C:\WP51, change that portion of the batch file.

33. Change Macro menu selections _____ WIN

WordPerfect for Windows lets you assign macros to the Macro menu so you can run them by clicking on their titles. But the menu can accommodate only nine macros. Here's a way to use more macros with the menu feature, which is handy if you create different sets of macros for different tasks.

For each group of macros that you want to use, create a macro that deletes the macros currently assigned to the menu and assigns the new set. For example, suppose you have a set of macros for saving files in different word processing formats. To assign this set to the Macro menu, you'd create a macro (called CONVERT.WCM, for example) that looks like this:

```
Application (WP;WPWP;Default;"wpwpUS.WCP")
MacroMenuDelete()
MacroMenuAppend (
    "Save as ASCII"; "SAVETEXT.WCM";
    "Save as WordStar file"; "SAVEWS.WCM";
    "Save as Ami Pro file"; "SAVEAMI.WCM";
    "Save as WinWord file"; "SAVEWORD.WCM";
    "Save as XyWrite file"; "SAVEXY.WCM";
    "Save as MultiMate file"; "SAVEMULT.WCM";
    "Save as DisplayWrite file"; "SAVEDISP.WCM";
    "Save as Rich Text Format"; "SAVERTF.WCM";
    "Restore normal menu"; "NORMMENU.WCM"
)
```

The MacroMenuDelete command erases the current selections from the Macro menu. The MacroMenuAppend command adds new entries to the menu. The first phrase in quotation marks in each line is the description that appears in the menu. The second phrase in each line is the name of the macro that will run when you click on that menu entry. Of course, the phrases and macro filenames you'll use will differ. Note the semicolons that separate the items.

The last line runs a macro named NORMMENU.WCM—a variation of this macro to restore your normal Macro menu selections. By including a similar line in each of your menu assignment macros, you'll always have a menu selection that lets you switch back to your usual menu with the click of a mouse.

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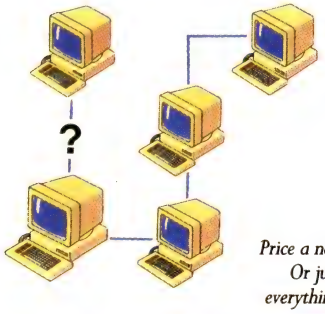

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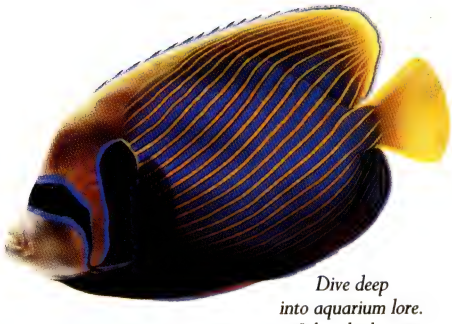

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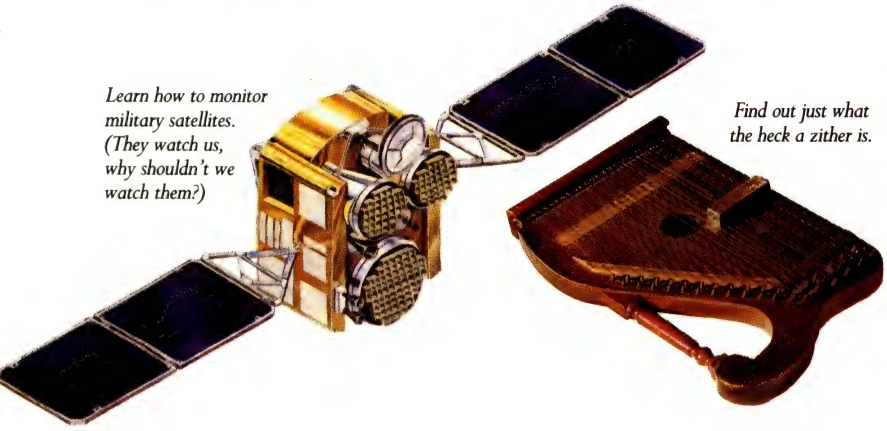

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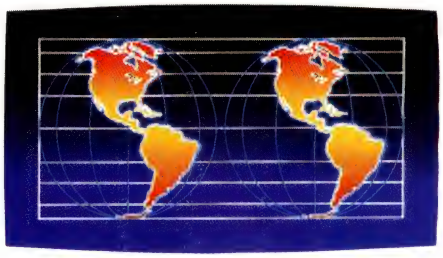

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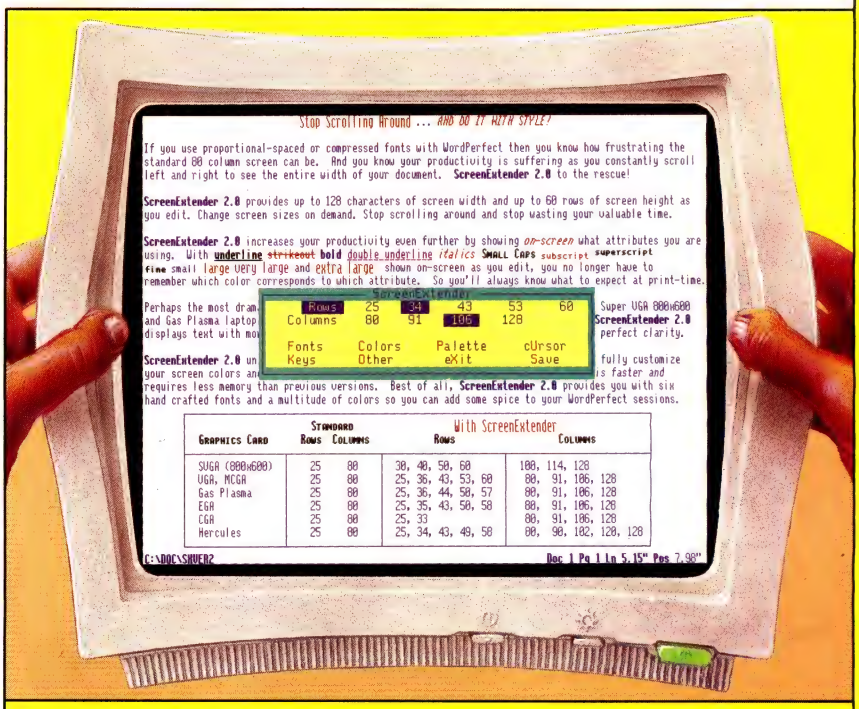

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34. Create custom menus _____ WIN

Tip 33 is fine if you want to switch between two sets of Macro menu selections in WordPerfect for Windows. But what if you have several sets of Macro menu selections to choose from? Giving a line to each one soon eats up the nine selections you can assign to the Macro menu. The solution is a customized menu created with the MENU command. This type of menu can also be used for any situation in which a menu would be helpful.

The following macro, MACROMEN.WCM, displays a menu in the center of the screen that lets you run any one of four other macros, each of which would, for example, assign a different set of selections to the main Macro menu:

```
Application (WP;WPWP;Default;"WPWPUS.WCD")
MENU (Choice; Digit; ; ; {"File format mac-
  ros"; "Mail merge macros"; "Table
  macros"; "Normal macro menu"})
CASE (Choice; {1; Files@; 2; Merge@; 3;
  Table@; 4; Normal@}; End@)
LABEL (Files@)
    CHAIN ("C:\WPWIN\MACROS\MACFILES.WCM")
    GO (End@)
LABEL (Merge@)
    CHAIN ("C:\WPWIN\MACROS\MACMERGE.WCM")
    GO (End@)
LABEL (Table@)
    CHAIN ("C:\WPWIN\MACROS\MACTABLE.WCM")
    GO (End@)
LABEL (Normal@)
    CHAIN ("C:\WPWIN\MACROS\NORMMENU.WCM")
    GO (End@)
LABEL (End@)
```

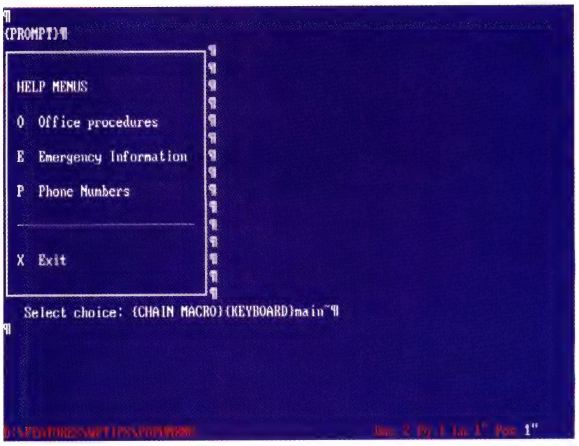
The MENU command at the top of the macro displays a menu with the numbers 1 through 4 and the labels shown in the command. The number that accompanies your selection from the menu is stored in the variable *Choice*, which is then used by the CASE command to tell the macro which label to branch to. At the appropriate label, the macro runs another macro that loads the appropriate set of main Macro menu selections.

35. Create pop-up menus in DOS _____ DOS

WordPerfect for DOS can display screens of helpful information over your current document without disturbing it in any way. The screens borrow the following codes from the Merge (Ctrl-F9) feature:

```
{PROMPT}message~ displays a message, which may
  contain up to a screen of text.
{CHAIN MACRO}macroname~ runs a macro.
{KEYBOARD} pauses a merge until you press
  Enter.
```

The illustration shows a sample menu as you'd enter it in the editing screen. Design the menu and save it. Use



TIP 35 In the DOS version of WordPerfect, use a combination of macro and merge code to create pop-up menus that let you easily select other macros. It's a helpful trick when you run out of keystroke combinations to assign macros to.

Line Draw (Ctrl-F3) to draw the box. Use a monospace font such as Courier so your spacing is correct. Use the space bar instead of the Tab key to position text inside the box. (Tabs aren't interpreted by the merge function.) Don't use boldface, underline, or other commands that create hidden codes, as they'll halt the merge.

The codes in curly brackets are not created by being typed directly. Instead, first position your cursor where you want the code to appear. Then press Shift-F9, More (6), move to the code you want to insert, and press Enter. When you're prompted to enter a message and a macro name, just press Enter. Because you didn't answer those prompts, the tildes (~) will be positioned incorrectly. Delete all tildes except the one at the end of the text and the commands shown here. Also, delete any extra spaces before and after the menu

Next, create the macro that pops up the menu: Press Macro Define (Ctrl-F10), assign a key, press Enter, give it a description, and press Enter again. Then press Merge/Sort (Ctrl-F9), Merge (1), the menu's filename, and Enter twice to bypass the Secondary file: prompt. The menu pops up at the bottom of the screen. Press Ctrl-F10 to turn off Macro Define.

Run the macro to display the menu again. Pressing Enter at the menu's Select Choice: prompt restores the editing screen but leaves a "File not found" message. To avoid this, create an empty macro that runs when you press X, Enter. In the illustration, the {CHAIN MACRO} code runs a macro. {KEYBOARD} pauses the menu for input from the keyboard. When you type X and press Enter, WordPerfect adds X to MAIN and runs the exit macro, XMAIN.WPM, which cleanly erases the menu. Pressing O, E, or P runs macros OMAIN.WPM, EMAIN.WPM, or PMAIN.WPM, which in this example bring up helpful text screens that could be created with similar merge displays. Of course, you can modify this technique to run any macros you like.

36. Include dialog boxes in macros _____ WIN

If you want to record a WordPerfect for Windows macro to open a dialog box so that a user can make selections on the fly, you have to use a poorly documented feature. Without this trick, if you try to record a macro that opens a dialog box but makes no changes in it, the dialog box won't come up at all when you run the macros. And if you do make a change in the dialog box without this trick, your macro will record those changes automatically, without asking for user input.

As you're recording the macro, open any dialog box and change any one of the items. Click on the small square in the upper-right corner of the dialog box (the square appears only when you're recording a macro). Now close the dialog box as if you wanted to save your change. Complete your macro and stop recording.

The changes you make in the dialog box will apply to whatever document you have open when you record the macro, so be sure to record your actions in a dummy document. When you play the macro later, however, the changes you included as you recorded it will not appear. The dialog box will simply open so that you can change any of the selections.

37. Repeat a macro _____ WIN

One of the features that WordPerfect lost in the transition from DOS to Windows was the Repeat key. In the DOS version, when you press the Repeat key, whatever key you press next is repeated a certain number of times, depending on how you've defined the Repeat key. The feature is particularly helpful when you want to repeat a macro.

Here's a macro called REPEAT.WCM that doesn't exactly duplicate the Repeat function—you can't use it with every keystroke—but it does allow you to repeat any macro a specified number of times.

```
APPLICATION (WP;WPWP;DEFAULT;"WPWPUS.WCD")
GetWPData (MacroVariable: DocPath; SystemVari-
  able: Path!)
GetWPData (MacroVariable: MacPath; SystemVari-
  able: MacroPath!)
```

101 Make WordPerfect's DOS and Windows versions coexist in harmony.

WordPerfect for Windows and WordPerfect for DOS each have their advantages. For writing drafts and printing, WordPerfect for DOS is faster. But for final formatting and working with graphical elements, the Windows version is more versatile. For people upgrading from DOS to Windows, the ideal WordPerfect setup includes both versions. Since document files are the same for both, you can retrieve your work into either program without converting it.

To make it easier to use both versions, here's a macro that launches the DOS version of WordPerfect from within the Windows version. Type it into a new document and save it with a name such as WPDOS.WCM in the directory where you normally keep macros.

```
Application (WP;WPWP;Default;"wpwpUS.WCP")
    DLLLoad (Kernel; "KERNEL.EXE")
    DLLCall (Kernel; "WINEXEC"; RET:WORD;
        {"C:\WP51\WP.EXE"; LOWORD (1)} )
    DLLFree (Kernel)
```

Change the part of the macro that reads C:\WP51\WP.EXE to reflect your setup if you keep your copy of WordPerfect for DOS in a different directory or drive. Assign the macro to the Button Bar or the Macro menu to keep the DOS version of WordPerfect just a mouse click away. If you're not running other applications—or if those other applications are minimized—you switch between the Windows and DOS versions of WordPerfect by pressing Alt-Tab. If you've already launched WordPerfect for DOS, don't use this macro to try to switch to it, since that will make your PC attempt to load it a second time.

If you're using both versions of WordPerfect, you can save about 2MB of disk space by eliminating duplicate copies of files that the two versions can share. An added advantage is that words you add to your spell-checker in one version of WordPerfect will be recognized when you use the other version.

Before following the rest of these instructions, back up both your DOS and Windows WordPerfect directories in case you delete a file you shouldn't. And note that these instructions assume a normal installation on drive C: in the \WPWIN and \WPC directories for the Windows version and \WP51 for the DOS version. If your installation differs, make the appropriate alterations.

Before you make the changes, you need to tell your DOS version of WordPerfect where to find the files that will wind up existing only in the directories of the Windows version. Run WordPerfect for DOS and press Shift-F1 to access the Setup: Location of Files screen. Edit the settings so that C:\WPC is the location for the thesaurus; the spell-checker; the hyphenation, main, and supplemental dictionaries; and printer files. Change the style files location to C:\WPWIN and the library filename to C:\WPWIN\LIBRARY.STY. Change the location for graphics files to C:\WPWIN\GRAPHICS.

If you haven't already installed WordPerfect for Windows, do that and run it so that the printer ALL files can create the PRS printer driver files. If your printer's manufacturer has supplied its own ALL file, copy that to your

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```
STRLEN (HowLong; MacPath)
SUBSTR (MacPath2; 1; HowLong - 1; MacPath)
FileChangeDir (DosCurrentDir: MacPath2;
  WPDirectory: DocumentsDir!)
PROMPT ("Choose a Macro"; "Double-click the
  macro you want repeated:"; 4; Ø; Ø)
FileOpenDlg ()
ENDPROMPT
GetWPData (MacroVariable: MacName; SystemVari-
  able: Name!)
Close (Save: No!)
STRLEN (HowLong; DocPath)
SUBSTR (DocPath; 1; HowLong - 1; DocPath)
FileChangeDir (DosCurrentDir: DocPath; WPDi-
  rectory: DocumentsDir!)
GETNUMBER (Repeats; "How many times do you
  want to run " + MacName + "?"; "Times to
  Repeat")
FOR (Times; 1; Repeats >= Times; Times + 1)
RUN (MacPath + MacName)
ENDFOR
```

The macro finds out the name of the current directory and the directory where you've set up WordPerfect to store macros. Then it changes to the macro directory and uses the Open File dialog box to present a list of macros. After you choose a macro, the parent macro opens the file just long enough to determine its filename, closes it, and changes back to the original directory. Then it opens a prompt box to ask how many times you want to run the selected macro. After you enter a number, a FOR command keeps track of the number of times the RUN command plays the macro.

38. End macro errors with Name Search ___ DOS

When you define a macro to pick a particular file, font, style, or printer, or any other item from one of the many WordPerfect for DOS lists, you'll have problems if you use the arrow keys to move to the desired item. If you add or delete items from the list after you've created the macro, the position of the item might change, and the macro will no longer work correctly.

To solve this problem, use the Name Search feature

C:\WPC directory first so it can be used in creating a printer driver.

Once you've created the printer drivers, you don't need the ALL files. You can delete any of those files in the \WPC directory and in your DOS WordPerfect directory. You can also print out any of WordPerfect for Windows' README.* files and MACRO.DOC or copy them to floppies and delete them.

Both Windows and DOS WordPerfect come with collections of graphics files with the extension .WPG. Copy all of the files into the same directory, preferably the default directory for graphics in the Windows version since that's the version with which you're most likely to use them. It's normally C:\WPWIN\GRAPHICS. After copying them, delete the graphics files from the directory in which the DOS version of WordPerfect has been storing them. (If you don't plan to use any of the graphics files at all, simply delete them from both directories.)

Several files in the DOS and Windows versions duplicate each other. Since WordPerfect for Windows is a newer version, it's better to retain its version of programs that aren't user-modifiable because they may have some minor improvements. So in your WordPerfect for DOS directories, delete any PRS files. Other files you can delete are GRAPHCNV.EXE, PTR.EXE, PTR.HLP, SPELL.EXE, WP.DRS, WP(WP)US.LEX, and WP(WP)US.THS.

Style libraries are the same in both versions. If you have different styles in each library, you can eliminate one of the LIBRARY.STY files if you first modify the remaining one to make sure it contains the styles you want.

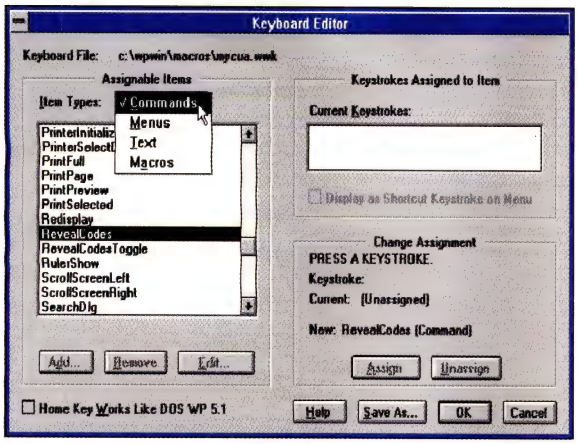
If you've been using the DOS version of WordPerfect for a while, you probably have a lot of effort invested in creating a supplemental spelling dictionary and perhaps modifying WordPerfect's hyphenation. Copy your DOS versions of WP{WP}US.SUP, WP{WP}.SPW, and WP{WP}US.HYC to your \WPC directory and delete them from your DOS WordPerfect directory.

Notice that not all files with duplicated names are eliminated. INSTALL.EXE, WP.LRS, WP.QRS, WP{WP}.SET and WP{WP}US.LCN are required in both the \WP51 and \WPWIN directories.

You can also eliminate other files that aren't needed by either version of the program. ENHANDLER.PS is needed only if you have a PostScript printer installed. The normal WordPerfect for Windows installation also includes drivers for other hardware you may not have. WPWPEGA.DLL, WPWPHERC.DLL, WPWPMVGA.DLL, WPWPVGA.DLL, and WPWP8514.DLL are used to display Button Bars on, respectively, EGA, Hercules, monochrome VGA, color VGA, and 8514 monitors. Delete any you don't need.

None of the files with a .TST extension is needed, although you might like to print them first with both versions of WordPerfect to compare how they carry out these tests. All WKB files are sample documents for use with the workbook manual. Delete them once you've gone through the manual.

After making these changes, run both versions of WordPerfect and test the spell-check, print, thesaurus, hyphenation, style, and print preview functions to make sure everything works.



TIP 41 To use the Keyboard Editor dialog box to change WordPerfect for Windows' CUA keyboard, first save the keyboard with a different name. Then you can assign commands, menu items, macros, or text to keystroke combinations.

that is an option in every WordPerfect list. For example, to define a macro that selects a style called Indent, press Macro Define (Ctrl-F10); enter a name and description for the macro; press Styles (Alt-F8), Name Search (N); then type Indent and press Enter. (The Search key, F2, can also start the Name Search feature.) The cursor moves to the style named Indent (or the style that most closely matches the name if an Indent style is not on the list). Select the style and Macro Define.

39. Save to two disks with one macro ____ DOS

If you work on the same WordPerfect for DOS documents at the office and on the road, you might save documents to both hard drive and floppy disk. This macro lets you save to both disks in one command. For the file to work properly, it must already exist in the A: drive and you must turn off Long Document Name and Create Summary on Save/Exit.

To use the WordPerfect macro editor, press Home, Macro Define (Ctrl-F10); assign an Alt-*key* combination to the macro (Alt-S in our example); and enter an optional description. Press Enter, and the macro editor appears. Now enter the listing below. The capitalized words in curly brackets are editor commands that you enter by pressing Ctrl–Page Up and selecting from the pop-up menu of macro commands. To create {Save}, press F10. To generate {Enter}, {Right}, {Backspace}, or {Del}, press Ctrl-V and the appropriate key.

```
{IF}"{SYSTEM}name~"=""~
{GO}noname~{END IF}
{Save}a:{SYSTEM}name~{Enter}y
{Save}{Right}{Backspace}c{Right}{Del}{Enter}y
{GO}end~
{LABEL}noname~
{BELL}
{PROMPT}Name this document before using this
macro {Enter}
        Press any key to continue.~
{LABEL}end~
```

When you invoke the macro, it saves the current file first to drive A: and then to drive C:, unless you haven't named the file. In that event, the macro jumps to the label "noname" and reminds you to name it.

40. Pop-up a calculator _____ WIN

The built-in math capabilities of WordPerfect for DOS were left out of the Windows version, but you can use the following macro to pop-up the Windows calculator on top of your WordPerfect document. Tap out any calculation, copy the result, close the calculator, and then paste the result into your document.

Type the following macro code into a new document and save it in your macro directory with a filename such as CALC.WCM. For even more convenience, assign the macro to a keystroke combination such as Ctrl-Shift-C.

```
Application (WP;WPWP;Default;"wpwpUS.WCP")
DLLLoad (Kernel; "KERNEL.EXE")
DLLCall (Kernel; "WinExec"; RetVal: WORD;
  {"CALC.EXE"; LOWORD (1)})
DLLFree (Kernel)
```

KEYBOARD TRICKS

41. Edit the CUA keyboard _____ WIN

WordPerfect for Windows supplies five keyboard layouts. One imitates many of the WordPerfect for DOS keystrokes. The default keyboard conforms to the CUA (common user access) interface that most Windows applications use. If you use other Windows programs, it makes sense to go with the CUA keyboard even if you're used to the WordPerfect for DOS layout.

The problem with the CUA keyboard is that you can't customize it, unlike the DOS keyboard. But you can make a copy of the CUA keyboard, which you can edit.

Load the CUA keyboard by choosing File, Preferences, Keyboard, Default (CUA), Create. When the Keyboard Editor dialog box appears, choose Save As and save the CUA keyboard with a name such as MYCUA.WWK. Now you can use the Preferences menu to select MYCUA.WWK as your active keyboard. Use the Keyboard Editor to customize it.

42. Reassign the Select toggle _____ DOS/WIN

The handiest key you can reassign using WordPerfect's Keyboard Editor is also one of the most overlooked. It's

the numeric keypad 5 key. It's particularly useful if the Select toggle function is assigned to it. Use it to turn on Select and your hand is already positioned to move the cursor to extend the selection.

To assign the Select toggle—or some other function of your choice—to the keypad number 5 with WordPerfect for Windows, choose File, Preferences, Keyboard. If the keyboard you want to edit is not already selected, click on Select and then choose the desired keyboard from the list box that appears. Choose Edit to bring up the Keyboard Editor dialog box.

In the Keyboard Editor, scroll through the Assignable Items list until you reach SelectToggle. Now press the numeric 5. In the Change Assignment area of the dialog box, next to the Keystroke label, you'll see the word Clear. This is WordPerfect's name for the numeric keypad 5 key. Click on the Assign button—don't try to tab to it. The word Clear should appear in the Current Keystrokes list in the upper-right corner. Click OK to save the change.

In the DOS version, press Setup (Shift-F1), Keyboard Layout (5), Edit (7), Create (4) and press the numeric keypad 5 when you're prompted for a key. At the description prompt, type Block and press Enter. A blank macro editor screen appears. Press Ctrl-V and then the Block key (Alt-F4). {Block} should appear in the macro editor screen. Press Exit (F7) three times to return to the normal editing screen and to save the keyboard layout.

43. Steal macros from keyboard layouts ___ DOS

WordPerfect for DOS ships with several keyboard layouts that contain different macros. If you want to use only one of the macros contained in a keyboard layout, it's easy to change a key definition from a keyboard layout into a standalone macro.

Choose Setup (Shift-F1), Keyboard Layout (5), and position your cursor on the keyboard that contains the key definition you want to steal. Choose Edit (7) for a list of the macros defined for that keyboard. Position your cursor on the definition you want, and choose Save (6). Now press the Alt-*key* combination you want to assign the macro to or enter a macro filename. Exit back to the document and use the definition by pressing the Alt-*key* assignment or by pressing Macro (Alt-F9) and entering the macro's filename.

44. Make faster keyboard assignments ___ DOS

To assign a new value to any key with WordPerfect for DOS, use the Keyboard Map function rather than a macro. It's quicker and more convenient.

For example, to assign one of WordPerfect's more than 1,700 extended characters to Alt-A, press Setup (Shift-F1), Keyboard Layout (5), Map (8). This displays the Keyboard Map screen, which lets you review and change key assignments by moving the cursor through a display of the alphabetic characters.

Move the cursor to the desired key combination, in this case Alt-A. Notice that Alt-A appears in the Key column at the bottom of the screen, and the current assignment ({Alt-A}) appears in the Action column.

Press Compose (5), and at the Key= prompt, type the code of the character you wish to assign to Alt-A and press Enter. For a British pound sign, type 4,11. All 1,700 extended characters are listed in the appendix to the WordPerfect manuals. If your printer's resident font set doesn't include an extended character, WordPerfect will automatically switch to graphics mode to print it. (Your printer must be capable of printing graphics to support this feature.)

45. Mutate keyboard macros _____ WIN

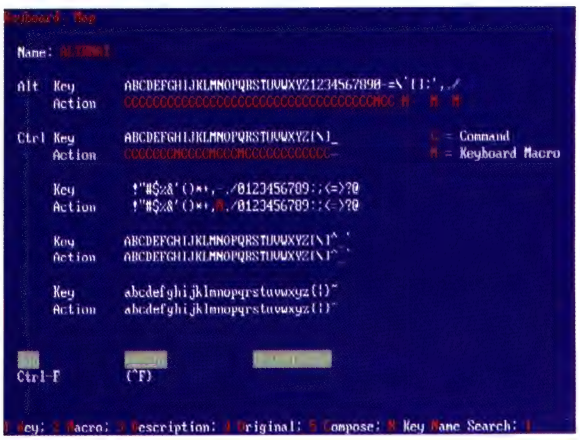
When you assign a macro to a WordPerfect for Windows keyboard layout, the macro code becomes a permanent part of the layout. If you revise the macro, the changes will not be reflected in the macro the next time you run it from the keyboard assignment.

One solution is to enter the Keyboard Editor (choose File, Preferences, Keyboard, Edit), unassign the macro, and then reassign it—a tiresome procedure. Another solution is to create macros that run other macros if you expect to revise them frequently. The following code runs a macro called LETTHEAD.WCM, which might be, for example, a macro to enter letterhead information, and which you might need to change from time to time. Copy this code into a new document and save it with the name RUNLETT.WCM in the directory in which you normally store your macros.

```
Application (WP;WPWP;Default;"WPWPUS.WCD")
CHAIN ("C:\WPWIN\MACROS\LETTHEAD.WCM")
```

You'll need to substitute the name of your own macro and macro directory if different from this example.

Assign RUNLETT.WCM to any of the eligible key-



TIP 44 Use the Keyboard Map screen in the WordPerfect for DOS Setup feature instead of macros to change your keyboard layout. Remapped characters are typed to the screen faster this way than if they're created with a macro.

strokes on your favorite keyboard layout. One drawback is that the CHAIN command cannot run a macro that isn't compiled. Be sure to run any revised macro manually before trying to run it through the keyboard assignment. (You should test run a revised macro, anyway, to make sure it works.)

46. Move and copy quickly _____ DOS

WordPerfect for DOS has a little-known, super-quick way of moving and copying text. Just select the text you want to move and press Ctrl-Del. Position your cursor where you want the text to appear and press Enter. To copy text, select the text and press Ctrl-Ins. Position the cursor where you want the text to appear and press Enter.

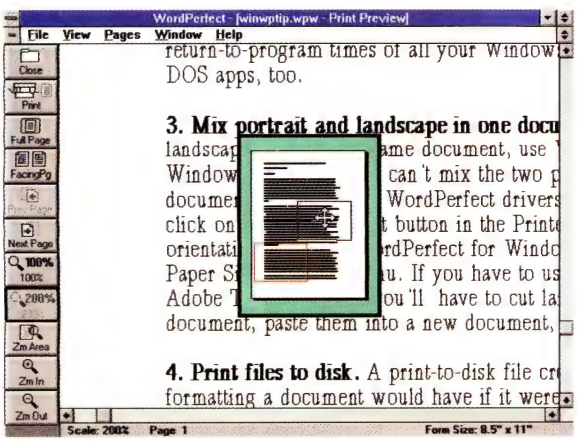
47. Rehighlight a block _____ DOS

WordPerfect for DOS users aren't always perfect themselves. It's possible, for example, that you may accidentally turn off a block highlight before accomplishing the desired task. To rehighlight the same block quickly, press Block (Alt-F4), Ctrl-Home, and Ctrl-Home again. This shortcut is also useful for performing more than one task on the same block.

48. Move text quickly _____ DOS/WIN

If you accidentally delete text, both versions of WordPerfect let you quickly restore it. In the DOS version, press Cancel (F1), Restore (1). In Windows, choose Edit, Undelete or press Alt-Shift-Backspace, Restore (R). Use this feature to move text quickly from one location to another.

Block the text you wish to move and delete it. Then move the cursor to where you want to place the text. Follow the restore steps and the text will reappear. You can restore only the last three deletions, so be careful not to make too many deletions before you reposition the cursor.



TIP 50 Lost during a 200 percent page preview? Click anywhere on the page to display a miniature image of the entire page. Then move the red rectangle anywhere on the miniature view to change the focus of the close-up view.

49. Check spelling efficiently _____ DOS

When checking spelling in WordPerfect for DOS, turn on NumLock and use the keypad to choose numbered options from the Not Found: line at the bottom of the screen. This way, your left hand is free to select alternate spellings from the lettered listings.

PRINTING

50. Orient yourself in 200% view _____ WIN

It's easy to get lost on a page preview in WordPerfect for Windows when it's magnified at 200 percent. To figure out which part of the page you're looking at in 200 percent print preview, click anywhere on the page and WordPerfect superimposes a small image of the entire page, with a red box around the portion that's currently enlarged. The small image uses "greeked" lines instead of actual characters to indicate text—but you can move the red box anywhere in the full-page view to change your position in the close-up view.

51. Print faster _____ WIN

If printing with WordPerfect for Windows is slow—and especially if it takes forever for the print dialog box to disappear—there are two solutions.

First, instead of the Windows printer drivers, use WordPerfect's own printer drivers, which provide faster throughput to the printer and restore control of the program sooner. WordPerfect's drivers also give you access to WordPerfect's 1,700 extended characters. Unfortunately, WordPerfect's drivers can't be used with Adobe Type Manager or with most other soft fonts developed for Windows 3.0. But you can use them with Hewlett-Packard's Intellifonts. To change drivers, choose File, Select Printer, and click on WordPerfect under Printer Drivers.

If WordPerfect's own printer drivers aren't fast enough for you, or if you must use Windows drivers, get PrintCache 2.5 from LaserTools ($149; 800-767-8004). PrintCache replaces Windows' Print Manager with a faster cache and printing manager that improves printing speed and return-to-program times of all your Windows applications. It can be used with DOS apps, too.

52. Mix portrait and landscape pages _____ WIN

To mix portrait and landscape pages in the same document, use WordPerfect for Windows' own printer drivers. Windows printer drivers can't mix the two page orientations in the same document. To select the WordPerfect drivers, choose File, Select Printer, and click on WordPerfect in the Printer Drivers box. To se-

lect paper orientations with the WordPerfect for Windows drivers, choose Layout, Page, Paper Size. If you have to use Windows drivers to use, say, Adobe Type Manager, you'll have to cut landscape pages from your original document, paste them into a new document, and print the two files separately.

53. Print rotated type _____ DOS/WIN

If your printer can handle graphics, you can print both portrait and landscape text on the same page with either version of WordPerfect.

Type the text to be printed in landscape mode into a text box. To do this in the DOS version, press Graphics (Alt-F9), Text Box (3), Create (3), Edit (9). After you type the text, don't close the text box. Rather, choose Graphics (Alt-F9) again and then rotate the text 90 degrees if you want the top to face the left margin or 270 degrees if you want it to face the right margin.

In the Windows version, choose Graphics, Text Box, Create, and after entering your text, choose Rotate before you close the box.

WordPerfect will print these rotated text boxes as graphics, so this technique is not limited to laser printers or printers with landscape fonts. Under the text box's Options menu, change Borders to None to eliminate the box that surrounds the landscape text.

54. Print files to disk _____ DOS/WIN

A print-to-disk file creates a file that includes all the formatting a document would have if it were printed on paper. There are two reasons to create print-to-disk files. One is that the file can later be copied directly to a printer, which is handy if you'll be using a printer connected to a PC without WordPerfect on it. The other reason is to create an ASCII file that includes your indents, spacing, heading, and other formatting touches.

In WordPerfect for Windows, print to disk by choosing File, Select Printer, selecting the DOS Text Printer, and clicking Setup. In the Printer Setup dialog box click on the Port option under Destination for a drop-down menu. Select File as the destination and enter the filename you want to print to in the box underneath.

In the DOS version, press Print (Shift-F7) and position the selection bar on the DOS Text Printer. If you don't have a DOS Text Printer, install it from your original WordPerfect disks. Select Printer (S), Edit (3), Port (2), Other (8) and type a filename. Press Enter until you return to the Print menu, then select Full Document (1).

If you often need to print documents to disk, set up a printer alias for that purpose. Enter the Select Printer dialog box and click on Add. Select the printer with the formatting you want to include in the print-to-disk file. For example, to create ASCII files that include your document formatting, choose DOS Text Printer even if you've previously added that to your printer selections. After WordPerfect has added the printer to your list of selections, click on it and choose Setup. In the Printer Setup dialog box, click on Port and choose File. Then in the Filename text box, type the name of the file you want the print-to-disk operation to use, such as PRNTDISK.TMP. Change the name of the printer in the Name text box to "Print to PRNTDISK.TMP" to avoid any confusion with an identical printer selection that prints to the printer instead of the disk. Click on OK to save the setup.

To create a print-to-disk alias in the DOS version, press Print (Shift-F7), Select Printer (S). With the cursor on the DOS Text Printer, choose Copy (4) and provide a filename without an extension, such as PRNTDISK. Press Enter for a screen of help information. Press Enter again for the Printer Edit screen. Select Name (1) and give the printer a name, such as Print to PRNTDISK.TMP. Then select Port (2), Other (8) and type a filename, such as PRNTDISK.TMP. Press Enter until you return to the document editing screen.

When you want to print to disk from either version of WordPerfect, select the Print to Disk printer to send the output automatically to a file named PRNTDISK.TMP. If you already have a file with that name from an earlier print-to-disk operation, it will be overwritten without warning.

55. Print Page *x* of *y* headers—Windows _ WIN

Use the following macro in WordPerfect for Windows to insert a line in a document header that reads Page *x* of *y*, where *x* is the current page number and *y* is the total number of pages in the document. Type the following macro code into a new document and save it as PAGEHEAD.WCM in the directory where you normally store WordPerfect for Windows macros.

```
APPLICATION(WP;WPWP;Default;"WPWPUS.WCD")
PosDocBottom ()
GetWPData (MacroVariable: LastPage;
  SystemVariable: Page!)
NUMSTR (LastPageText; ; LastPage)
PosDocVeryTop ()
HeaderFooter (Operation: Create!; Item:
  HeaderA!)
Type ("Page ")
PageNumberInsert ()
Type (" of " + LastPageText)
```

The macro moves to the last page of your document, finds out its page number, and stores the information as a variable. Then it moves to the top of the document, where it opens the header editing screen and inserts the text that includes the total number of pages along with WordPerfect's code for the current page number. The macro leaves the header editing screen open so you can include any other text or formatting you want.

Run this macro just before you print. If you've added or deleted text in the document since you last ran the

macro, the total number of pages may have changed.

To edit the macro so that it works with a footer, change the parameter HeaderA! to FooterA!.

56. Print Page *x* of *y* headers—DOS _____ DOS

To insert a Page *x* of *y* line in a WordPerfect for DOS document header, record these keystrokes in a macro.

Keystroke	Explanation
{Home}{Home}{Up}	Move to the beginning of the document.
{Format}phbp	Choose Page Format, Headers, and create a Header B for every page.
{Center}Page ^B of	Center the text "Page ^B of ". (Be sure to include a space after *of*.)
{Mark Text}rrpEND {Enter}	Create a reference called END that references the last page of the document. (A ? will appear.)
{Exit}{Exit} {Home}{Home}{Down}	Move to the end of the document.
{Mark Text}rt{Enter}	Create a target called END.
{Mark Text}ggy	Generate the document. (During this process, the page number will be inserted in place of the ?.)
{Home}{Home}{Up}	Return to the beginning of the document.

If you edit the document after running the macro, make sure that you insert any additional text before the target code at the end of the document. You should also generate the document before printing by choosing Mark Text (Alt-F5), then Generate, Tables, Cross-References, Indexes, etc. (5), so that the total number of pages is always correct.

57. Put paths and filenames in headers ____ WIN

Use the following macro in WordPerfect for Windows to automatically insert the path and name of a document into a header. Type the macro code into a new document and save it as NAMEHEAD.WCM in the directory where you usually store WordPerfect for Windows macros.

```
APPLICATION(WP;WPWP;Default;"WPWPUS.WCD")
LABEL(Start@)
GetWPData (MacroVariable: DocName;
  SystemVariable: Name!)
IF (DocName="")
  FileSaveAsDlg()
  GO (Start@)
ENDIF
GetWPData (MacroVariable: PathName;
  SystemVariable: Path!)
ASSIGN (FullName; PathName + DocName)
PosDocVeryTop ()
HeaderFooter (Operation: Create!; Item:
  HeaderA!)
Type (FullName)
```

The macro uses a command to find out the current document's name and path name. (If you haven't named the file yet, the macro opens the Save As dialog box so you can do so.) Then it inserts the path and filename into the header editing screen. The screen remains open, allowing you to add text or formatting changes.

To edit the macro so that it works with a footer, change HeaderA! to FooterA!. You can also combine the macro code here with the code for PAGEHEAD.WCM in Tip 55 to create a macro that includes both the file and path names and Page *x* of *y* information.

58. Refine merge printing _____ DOS/WIN

The merge printing feature in both the DOS and Windows versions of WordPerfect lets you work around inconsistencies common in address files. In a list of magazine editors, for example, you would normally include the editor's first and last name, but in some cases the editor's name might not be available. In those situations you'd want to use the salutation Dear Editor:.

In the text of the letter, you want the salutation formatted as Dear {FIELD}salutation~ {FIELD}lastname~ to produce something like Dear Ms. Jones, except where the last-name field was empty in the address file, in which case the salutation would be Dear {FIELD}title~.

You could compile two lists, one with first and last names, the other with the word *Editor* in the last-name field. But it's much simpler to use merge codes to insert the last name or the word *Editor* selectively.

When a field in an address file is blank, WordPerfect ordinarily inserts a blank line when it prints the letter. You can prevent this with the WordPerfect {IF NOT BLANK} . . . {END IF} construction. For example:

```
{IF NOT BLANK}firstname~{FIELD}firstname~ {END
  IF}{IF NOT BLANK}lastname~{FIELD}lastname~
  {ENDIF}
```

{IF NOT BLANK} was introduced in WordPerfect 5.1 to replace the older "?" code. You can still use "?", which is simpler. But if a "?" code is followed by text or other codes on the same line, the codes and text will be omitted when the field followed by "?" is empty in the address file.

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come deletions, since each line contains just one field:

```
{FIELD}title?~
{FIELD}magazine?~
{FIELD}address1?~
{FIELD}address2?~
{FIELD}city~, {FIELD}state~ {FIELD}zip~
```

The salutation line is a bit more complicated. Since there's more than one field in the line, you must use {IF NOT BLANK} instead of "?" to prevent text and codes from being deleted:

```
Dear {IF NOT BLANK}salutation~{IF NOT
  BLANK}lastname~{FIELD}saluta-
  tion~ {FIELD}lastname~
{ELSE}
{FIELD}title~
{END IF}
{END IF}
```

This example is broken here into separate lines to clarify the logic behind it, but it should be entered as one continuous line with no spaces except the one between {FIELD}salutation~ and {FIELD}lastname~. The commands tell WordPerfect to use the salutation and last-name fields unless either one is blank; in that case the {ELSE} command says to use only the title field.

59. Print envelopes on a LaserJet _____ DOS

If you're using WordPerfect for DOS with an HP LaserJet printer, this technique makes it easy to print addresses on envelopes. First, create a document called ENV with these margin settings:

Left: 5"
Right: 0.25"
Top: 2"
Bottom: 0.25"

After the margin setting codes, press Format (Shift-F8), Page (2), Paper Size (7). Move the cursor bar to Envelope—Wide and choose Select (1). Press Enter twice to return to the document screen. Save the document to the WordPerfect for DOS directory, normally C:\WP51 with the name ENV.

Now record a macro to print a letter and the envelope. This macro assumes that on the letter you insert at least one blank line between the date and the address and that you use the salutation Dear *Name* right after the address. Before you can create the macro, you need to have a document onscreen that matches those requirements. Either retrieve a letter or type the date, address, and salutation in a new document.

To create the macro, press Macro Define (Ctrl-F10), type Alt-E or any keystroke combination you prefer to assign to the macro, describe the macro as something like Envelope Print, and press Enter.

Press Home, Home, up arrow, Search (F2) and then type Dear followed by Search (F2) again. This should put your cursor at the end of the word Dear.

Now Press Home, Home, left arrow to move to the start of the Dear *Name* line. Press the left arrow once more to take the cursor up one line. Press Block (Alt-F4), Search Left (Shift-F2), Enter, Enter, Search (F2) to define a block of type that should include the address. Copy the block by pressing Move (Ctrl-F4), B, C (for Block, Copy).

Press Home, Home, down arrow to move to the end of the document. Press Ctrl-Enter to insert a hard page break. Press Retrieve (Shift-F10), and at the prompt type the path and name of the ENV file you created earlier. In this example, you'd type C:\WP51\ENV and press Enter. Press Home, Home, down arrow once more to move the cursor to the end of the coding you just retrieved in the ENV file. Now Press Enter once more to paste the copy of the address. Finally, press Ctrl-F10 to stop the macro recording.

When you actually use the macro, press Reveal Codes (Alt-F3); you should see the codes for the envelope paper size and margins before the address. Press Print (Shift-F7), and WordPerfect will print the letter, pause until you manually insert an envelope, and then print it.

60. Print manually with one keystroke ____ DOS

When you're feeding paper or envelopes manually for a WordPerfect for DOS printout, it takes several keystrokes to make each page print. Reduce them to one keystroke with the following macro.

From within WordPerfect, press Shift-F1 to bring up the Setup screen, then choose Keyboard Layout (5). The keyboard you're using will be highlighted. Press Map (8) to see the keyboard map. Move the cursor to select the Ctrl- or Alt-*key* combination that you wish to assign to the macro, then press Macro (2). This brings up the Key: Action box. Type the following action:

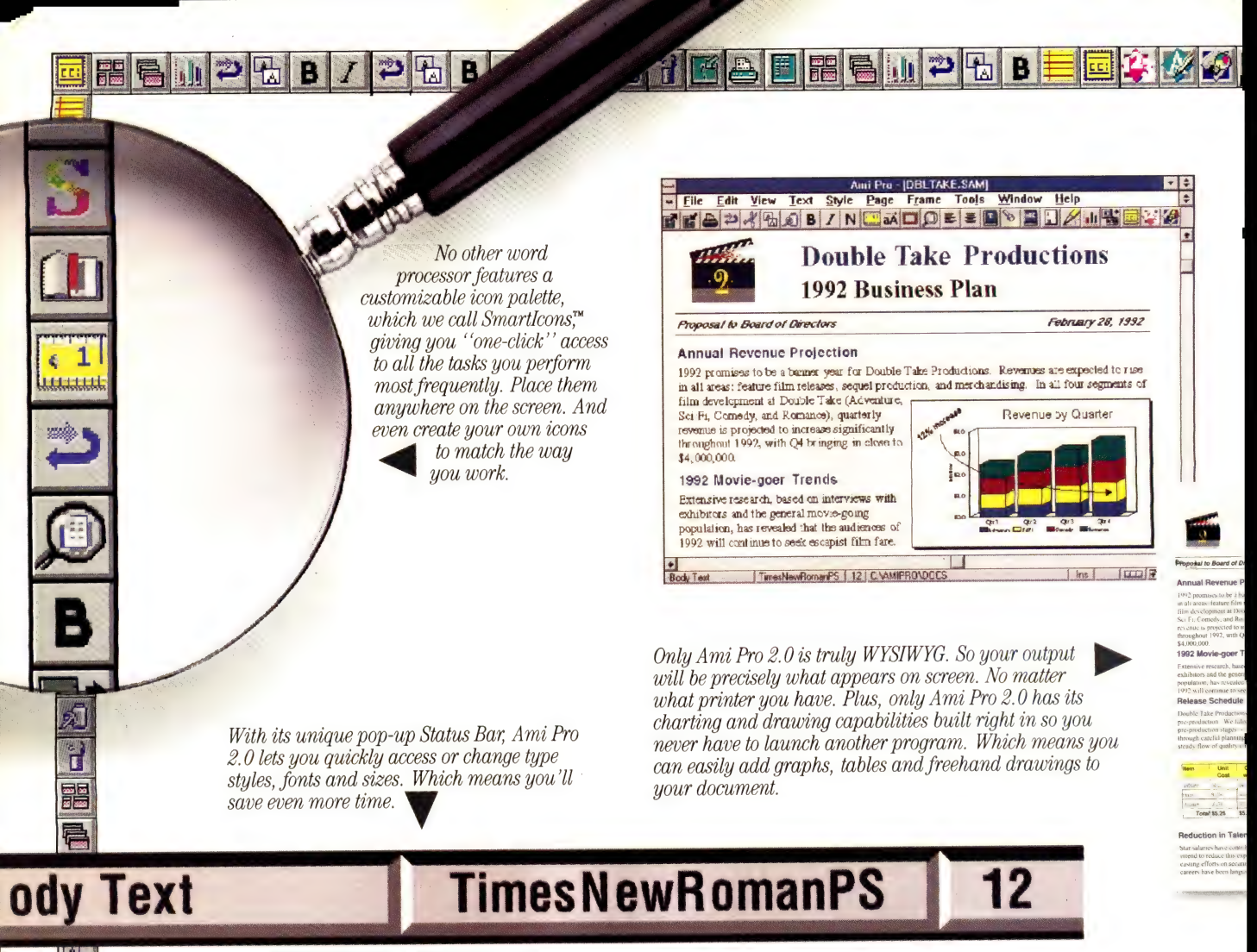
```
{Print}CG{Enter}{Enter}
```

First, enter the {Print} command by pressing Shift-F7. Then press Ctrl-V followed by the Enter key twice for the {Enter}s. Once you've entered the macro, press Exit (F7) three times to return to your document.

When you press the Ctrl-*key* or Alt-*key* combination to which you assigned the macro, it will tell the printer to Go and then return to your document.

61. Access your fonts quickly _____ DOS

If you use different sets of fonts for different documents in WordPerfect for DOS, here's a simple way to stay within the limited memory of your printer while reducing printing time: Define a different printer driver for each set of fonts you usually use. With an asterisk, mark the fonts that you normally use for a newsletter in the printer driver Newsletter Laser, for example. Another printer driver, Letter Laser, could have asterisks by the



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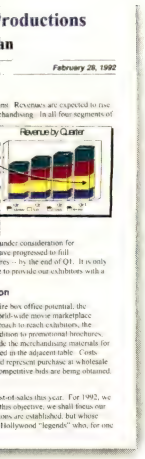

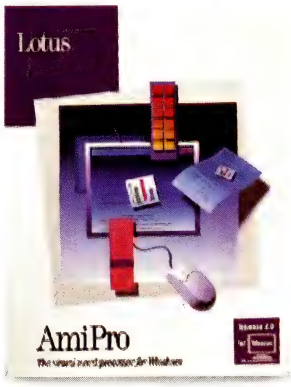

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Make a copy of a printer driver by typing Shift-F7, Select Printer (S), placing your cursor on the printer whose name you wish to change, and pressing Copy (4). When you're prompted for a name, enter something like LETTER, with no extension, and press Enter. Press Enter again to clear the help screen that will appear. In the Select Printer: Edit screen, choose Name (1), and enter a descriptive name for the printer, such as Letter Laser. Then select Cartridges/Fonts/Print Wheels (4) to mark the fonts you want to use with this driver.

Before you print a newsletter, make sure Newsletter Laser is the selected printer and that you've initialized the printer by typing Shift-F7, Initialize Printer (7). When you want to print letters, make sure Letter Laser is the selected printer and reinitialize your printer.

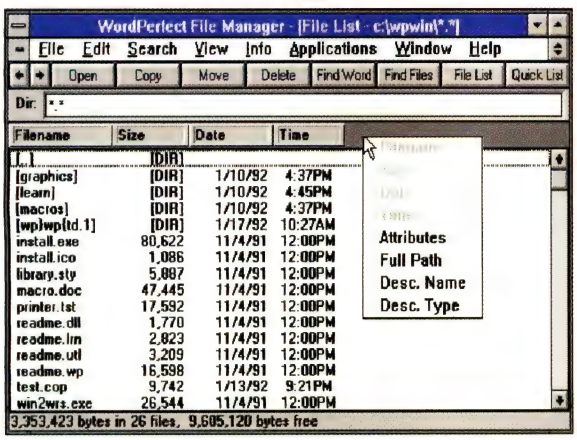
FILE MANAGEMENT

62. Add long filenames to File Manager ___ WIN

The Open File dialog box in WordPerfect for Windows doesn't display the long document names available in the DOS version's List Files display. But WordPerfect for Windows' File Manager displays long filenames, summary screen information, and other data that isn't displayed in the Open File dialog box.

Run the WordPerfect File Manager by clicking on File, File Manager. Select View, File List for a list of files in the current directory. In the Column Manager—the bar at the top of the File List window that displays filenames—click and hold on any empty space. A menu will appear with the items that you can choose to display in the file directory. Select Desc. Name to add descriptive filenames to the directory information.

If you choose to save this view of the File List (see tip 64), note that because WordPerfect must read descriptive filenames from each file in a directory, opening File Manager and changing directories may become slower.



TIP 62 Display long filenames in WordPerfect's File Manager by clicking on the Column Manager bar. Select Desc. Name or any of the other items included on the menu that pops up to add those items to the directory display.

63. Customize File Manager listings _____ WIN

In WordPerfect for Windows, it's easy to change the order of items displayed in File Manager's listings of File List, Quick List, and Search Results windows and the amount of space devoted to each item. If you want to change the order of items—say, move descriptive filenames to the far left—click on the item you want to move in the Column Manager at the top of the window and drag it to where you want it to appear. The columns of information will realign to match your changes.

To delete a column from the directory listing, drag its heading off the Column Manager. To change the amount of space devoted to a column of information, move the mouse pointer to either side of the column's heading box until a two-way arrow appears. Drag right or left to increase or decrease the size of the box.

64. Save File Manager settings _____ WIN

WordPerfect for Windows' File Manager allows you to customize the layout of the various windows that display files and their contents, and you can save your custom layout. To change File Manager so it always opens with a layout you've designed, load the File Manager; choose File, Preferences, Environment; and select Save Current Layout on Exit. Once you have the layout you want to use regularly, exit File Manager.

The next time you run File Manager, it will automatically display your custom layout. But you have to take one more step to make sure you don't lose it. After you've opened the File Manager a second time, again choose File, Preferences, Environment and this time uncheck the Save Current Layout on Exit box. This ensures that any temporary changes you make aren't saved the next time you exit File Manager.

65. Simplify routine file chores _____ DOS/WIN

In WordPerfect for Windows, use the Options button in the Open File dialog box to perform many routine file chores. Open the dialog box by clicking on File Open. Select any file you want to delete, move, rename, or copy, and then click and hold on the Options button. Then choose the Delete, Copy, or Move/Rename.

In WordPerfect for DOS, press List Files (F5) and select the Delete, Copy, or Move/Rename options.

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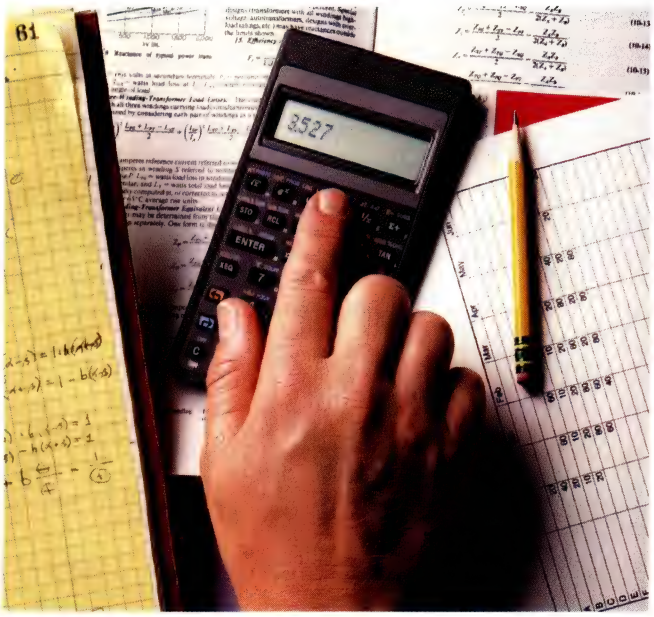

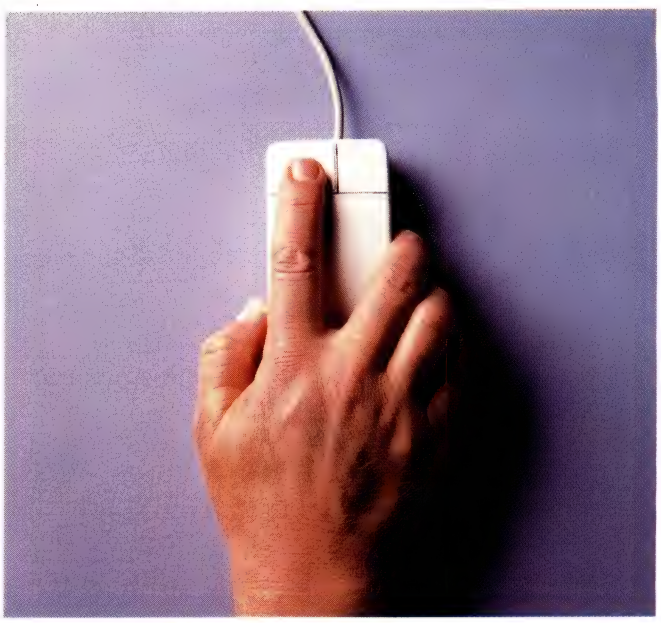

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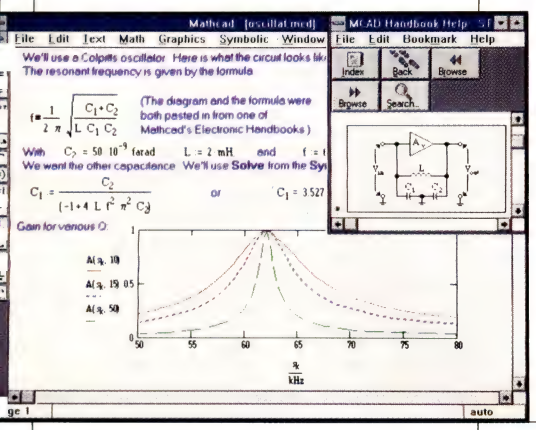

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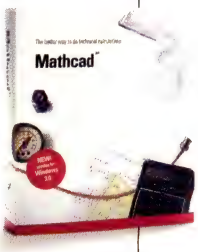

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66. Search across directories _____ DOS/WIN

Use the Find choice under the Options button of the Open File dialog box in WordPerfect for Windows to look for files through several subdirectories or throughout all directories on a drive based on their filenames or on words included within the files. Choose File, Open, Options, Find, Find Words (or Find Files).

In the DOS version, press List Files (F5), Find (9).

In either version you can search for words based on the following patterns. You can type the words in any combination of uppercase and lowercase letters.

A * in a word can stand for any number of letters. A search for cat* would find files that contain *cat, catalog,* or *catapult.* As with the DOS * wildcard, characters in the filename that appear after the * will be ignored.

A ? in a word stands for any one character. A search for ?at finds files with *cat, hat,* or *rat.*

Enter words separated by spaces or semicolons to find files that contain all those words. Arizona California or Arizona;California will find files that contain both the words *Arizona* and *California.*

Enter words separated by commas or vertical lines to find files that contain either one or both of the words. Arizona,California or Arizona|California finds files that contain the word *Arizona* and files that contain the word *California.*

Enter two words separated by a hyphen or an exclamation point to find files that contain the first word unless it also contains the second word. Arizona-California or Arizona!California will find files that contain the word *Arizona* unless those files contain the word *California* as well.

To find files that contain phrases that include a space, put quotation marks around the phrases. For example, "bird house";"dog house" finds files that contain both the phrases *bird house* and *dog house.*

To narrow a search under Windows, enter additional search criteria and select Search Results List. Under DOS, select Find again and do another search on the files presented from the first search. Under Windows, select the appropriate radio button to apply the search to the current directory, subtree, or drive.

67. Flip through floppies with List Files ____ DOS

Search a stack of floppies quickly with WordPerfect for DOS's List Files (F5) command. You can redisplay the most recent List Files screen by pressing F5 twice. This doesn't work with floppy disks, but there are at least two ways to thumb through floppy disk directories without exiting List Files and retyping F5, A:, Enter.

One way is to display the first A: directory, insert another disk in A:, and, without leaving List Files, press F5. The new directory appears.

A second method is to log on to the floppy drive. For example, to log on to drive A:, press List Files (F5), =, A:; type a filespec or accept *.*; and press Enter (a perfect application for a macro). When you exit to the editing screen, press F5 twice to redisplay the floppy directory while you remain logged on to drive A:.

If you return to drive C: and then relog on to A:, the F5 repeat function no longer works. To redisplay the A: directory while you're working with a file on the C: drive, remain logged on to A:. To save your work on C: while you're logged on to drive A:, type a C: drive and path spec at the Document to be saved: prompt.

68. Speed backup with WordSearch _____ DOS

WordPerfect for DOS lets you find all the files in a directory that contain a specific word or meet specific conditions. Use this feature to mark and copy all the files in a directory that have changed since your last backup.

Choose List Files (F5), Enter. Then choose Find (9), Conditions (5), Revision Date (3) and type in From: and To: dates. For From: enter the date you last backed up. Use the current date for To:. Choose Perform Search (1), Enter, for a modified list of files in that directory that have been created or modified since your last backup.

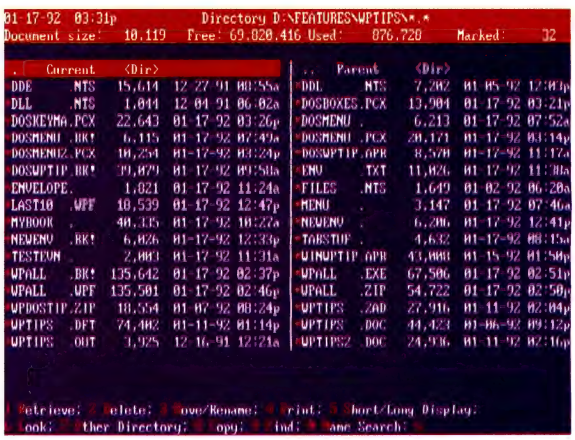
To copy all those files to a floppy, press Home, *, and an asterisk will appear next to each of the files. Select Copy (8). At the Copy marked files? prompt, respond with a Y for Yes. The next prompt will read "Copy all marked files to:". Enter A: or B: as the destination.

69. Use faster DOS commands _____ DOS

To perform common DOS functions such as Copy, Rename, and Delete in WordPerfect for DOS, use the DOS Command function (Ctrl-F1, 2) instead of List Files. Not only do DOS commands execute faster but the function also lets you use macros that execute DOS commands.

70. Redisplay directories _____ DOS

If you press WordPerfect's List Files key (F5) twice, you won't necessarily see the current directory. Instead,



TIP 68 The Find function in the List Files feature of WordPerfect for DOS lets you display all files that have been created or updated since the last time you did a back-up and mark them with asterisks for a new floppy back-up.

New for Windows 3.0/3.1

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Winter Issue — Volume 8, Number 2

A Travel Plus Publication

Gateways

INSIGHTS FOR THE BUSINESS TRAVELER

Three Great Places to Mix Business with Pleasure

If business is taking you on the road soon, why not extend your trip into a memorable vacation? Three exciting American cities, Boston, Chicago, and San Francisco, are luring increasing numbers of business travelers, and provide plenty of sights, sounds, and flavors to satisfy even the most demanding vacationer.

* * * * *

Too often, business "travel" limits one to a view of the hotel and convention hall, [illegible]uch else. Here's [illegible]en missing all what you may have these years.

offers many rewards to those who take the time to uncover its cornucopia of riches.

For an interesting lesson in American history, don your walking shoes and follow the Freedom Trail (536-4100). The trail's two loops will lead you past no fewer than 16 historical sites, including the Old North Church, the location of the Boston Massacre, the Granary Burial Ground, the Old Corner Bookstore, Paul Revere's House, and the Old South Meeting House.

Beantown contains far too many historical gems to mention here, but make an effort to visit the Boston Tea Party Ship and Museum in southern Boston (338-1773), the John F. Kennedy Presidential Library (929-4523) in Dorchester, the Bunker Hill Monument in Monument Square (Charlestown, 242-5641), and "Old Ironsides" (426-1812, also in Charlestown).

(continued on page 4)

Make the Most of Your Trade Show

TRAVEL PLUS BULLETIN

Suppose your company was going to attend an upcoming trade show. This would be an excellent opportunity to leverage the event. Your agenda might include making an important press announcement to the media covering the show, gathering your regional sales executives for a strategic review, and entertaining your key clients and contacts. You may be surprised to know that Travel Plus can help you arrange your entire trade show program.

(continued on page 4)

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Travel Productivity 3

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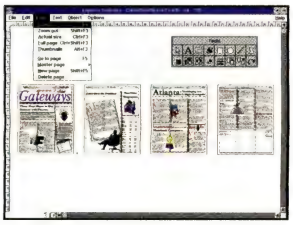

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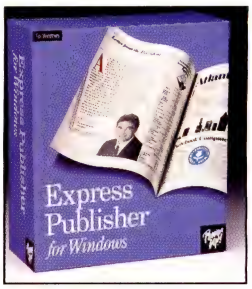

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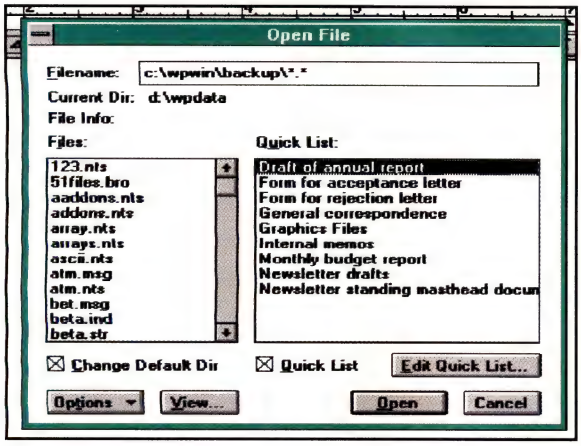


TIP 72 WordPerfect for Windows' Quick List is the handiest way to change directories. You can also use it to include individual documents you frequently use so you can retrieve them without having to change directories.

you will see a redisplay of the last List Files screen you called, including the last filename you highlighted. If the last List Files screen was the current subdirectory, this is a handy way to redisplay it. And if during your last directory display you wandered through subdirectories using the Enter key so as not to change subdirectories permanently, pressing F5 twice is a quick way to get back to the last subdirectory without repeating your wanderings. (Pressing List Files twice doesn't work with floppy drive directories; see Tip 67, "Flip through floppies with List Files.")

This screen is exactly like the last List Files screen, so it will not show new files or changes in file sizes or modification times. To update the list, position the cursor on the Current <DIR> line—usually by pressing Home, Home, Page Up, Enter, Enter.

71. View file summary information _____ WIN

While the File Open dialog box is open in WordPerfect for Windows, click on any filename to find out the size of the file and the time and date of its creation or last update. The information will appear near the top of the dialog box, next to the label File Info:.

72. Access files quickly _____ WIN

WordPerfect for Windows' Quick List is handy not only for changing directories but also for getting fast access to specific files.

Select File, Open. Select Quick List if it is not already displayed and then click on Edit Quick List and Add. In the Directory/Filename text box, enter the complete path and filename of the file you want to add to the list. In the Descriptive Name text box, enter the description of the file that you want to add, and click on OK.

The next time you want to retrieve the file, all you have to do is double-click on its descriptive name from the Quick List.

73. Create multiple Quick Lists _____ WIN

WordPerfect for Windows' Quick List is helpful—unless it becomes overcrowded with descriptive names. The solution is to create two versions of the file that keeps track of your Quick List. Use one to display a Quick List that, for example, displays directories with files that relate to your daytime job, and use the other file to display directories that relate to your side business.

The file that keeps a record of your Quick List entries is WPC.INI, which is stored in your main Windows directory. Before doing anything with WPC.INI, make a backup copy you can restore if something goes wrong. Then edit your Quick List so that it contains only the directories for your daytime job files. Save the list and copy WPC.INI to WPCDAY.INI. Now reedit your Quick List so it contains only entries for your part-time business and save the list again. Now copy WPC.INI to WPCNITE.INI.

To use the different Quick Lists, create two batch files for launching Windows. DAY.BAT consists of

```
COPY C:\WINDOWS\WPCDAY.INI C:\WINDOWS\WPC.INI
WIN
```

NITE.BAT consists of

```
COPY C:\WINDOWS\WPCNITE.INI C:\WINDOWS\WPC.INI
WIN
```

Run DAY to load Windows when you want to work with your daytime files and NITE when you want to work with your part-time business files. To change from one Quick List to another, exit WordPerfect and Windows and reload both using the other batch file.

74. Customize document summaries __ DOS/WIN

When you use the Extract feature in the Document Summary dialog box (accessed by selecting Layout, Document, Summary), WordPerfect automatically adds the first 400 characters from the current document to the Abstract text box. If the characters RE: appear in those four hundred words, WordPerfect inserts the first 160 characters that follow RE: into the Subject text box. (If it encounters a carriage return before it reaches the 160th character, the insertion ends there.)

RE: is the default because it appears in many memos, but if you create documents that contain a different heading and you'd like to search files for that information, change the Subject search text setting. Choose File, Preference, Document Summary. The Document Summary Preference dialog box will appear with RE: already entered in the Subject Search Text field. Simply replace RE: with any text that you prefer, such as Subject: or TO:, and click on OK to save the setting.

To change RE: to something else in the DOS version, press Setup (Shift-F1), Document Management/Summary (4), and Subject Search Text (2).

TABLES

75. Convert columns to tables _____ DOS/WIN

If you have columns of information in tabbed or parallel-column format, consider converting it to a table. Tabled information provides more formatting options and can include mathematical operations. Converting tabular information to tables is a snap.

In WordPerfect for Windows, select tabbed or column text using the mouse or cursor keys. Then click on the Table button on the ruler and choose Tabular Columns. Or choose Layout, Table, Create from the menus.

In WordPerfect for DOS, block the tabbed text and press Columns/Tables (Alt-F7), Tables (2), Create (1), and Tabular Column (1). The tabbed text will be placed in a table and you'll be in the table-editing screen. Make any changes you want to the table's format and then press Exit (F7) to return to the normal editing screen.

These methods work best when you first delete any unneeded tab stops.

76. Convert tables to text _____ DOS/WIN

If you need to convert a table to simple tabbed text—this is necessary to convert a document with a table in it to an ASCII file—there's no menu selection to do the job. But there's a trick that lets you do it.

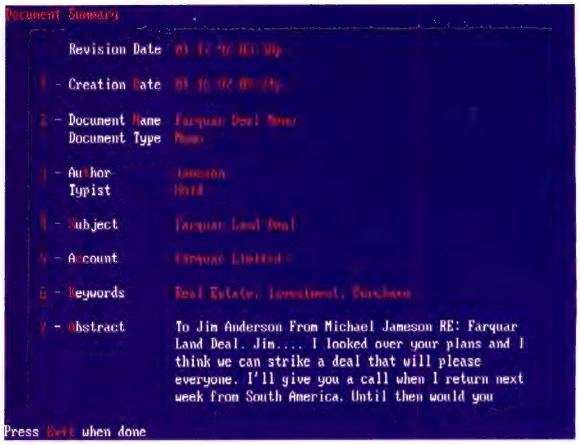
In WordPerfect for Windows or for DOS, enter the Reveal Codes screen—in Windows by selecting View, Reveal Codes from the menu and in DOS by pressing Reveal Codes (Alt-F3). Find the table code [Tbl Def: . . .]. Highlight it and press Del. WordPerfect for Windows will present a dialog box asking if you want to delete the entire table, its contents (text only), or its table structure (leave text). Choose Table Structure and click on OK. WordPerfect for DOS will automatically delete the table structure and leave the text intact.

77. Correct table displays _____ WIN

If the widths of cells in a WordPerfect for Windows table seem to grow inexplicably, causing the table to expand beyond the right side of the screen, correct the problem by using the Display Pitch setting.

Display Pitch doesn't affect printing, nor does it have an appreciable effect on how the text outside of tables is displayed. But if Display Pitch is set to Auto, tables tend to insert more white space than is needed.

To correct the situation, choose Layout, Document, Display Pitch. In the Display Pitch dialog box, you'll probably see that the Auto radio button is chosen and that the number next to the Manual button is more than 100 percent. Click the Manual button, change the setting to 100, and click OK.

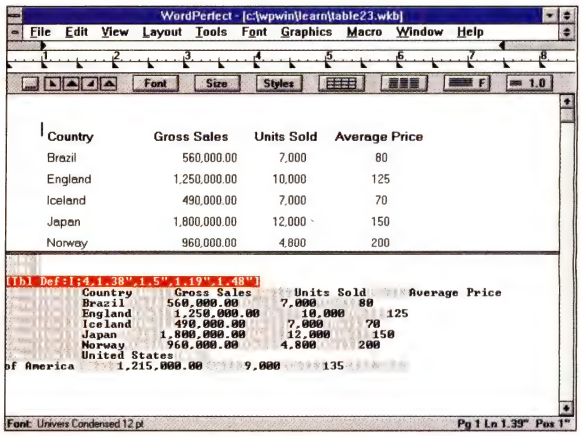


TIP 74 If you identify your memos with a descriptive phrase, you can add that phrase to Document Summary preferences so that the text following that phrase is automatically added to summaries when an extract is performed.

78. Change table column widths _____ DOS/WIN

Changing the widths of columns in tables is simple if you display the ruler in WordPerfect for Windows (the toggle for displaying the ruler is under the View menu). Place the insertion point anywhere in a table, and inverted triangles appear across the top of the ruler, aligned with the edges of the columns. To change the width of a column, click and drag the corresponding triangle.

Dragging the column marker widens or narrows the column and adjusts all other columns to the right of the changed column; the table width remains unchanged. Holding the Shift key down when you're moving the column marker causes the next column to the right to expand or shrink to make up the difference; the table width remains the same. Holding the Ctrl key down



TIP 76 To convert tables to tabbed text in WordPerfect for Windows, use Reveal Codes to find the table code and delete it. A dialog box asks if you want to delete everything or just the table structure so that text is left intact.

while dragging a table marker doesn't affect the other columns; instead, it widens or narrows the table width accordingly.

In WordPerfect for DOS, position the cursor in the cell you want to change and press Columns/Tables (Alt-F7). Then hold the Ctrl key as you press the left or right arrow to change the width of the cell you're in. Cells to the right of it will be adjusted so that the overall width of the row stays the same.

79. Set off text with a table _____ DOS

In WordPerfect for DOS, it's often easier to set off text inside a box using a table rather than a text box. Unlike with a text box, the table and text remain visible in the edit screen.

For a box that has no text on either side, choose Columns/Table (Alt-F7), Tables (2), Create (1), and then enter 1 for the number of columns and 1 for the number of rows. Choose Options (6), Position of Table (3) to set the position of the table between the page margins. Exit back to the Table Edit menu. Change the width of the cell using Ctrl–left arrow and Ctrl–right arrow. You can change the thickness of the border using the Lines (3) option from the Table Edit menu. Now exit back to your document and enter the text inside the cell.

MISC.

80. Save keystrokes with variables _____ DOS

WordPerfect for DOS lets you define variables from the editing screen. This feature provides a quick method for entering frequently repeated text strings such as names and terms.

At the editing screen, press Ctrl–Page Up. At the Variable: prompt, type a number from 0 to 9 and press Enter. At the Value: prompt, type a text string of up to 79 characters and press Enter.

To insert the saved text in a document, press Alt and the variable number. WordPerfect codes are stripped from the text to retain boldfacing and similar commands, use Macro Define to save the text string.

To assign up to 120 characters to a variable, type the text and highlight it with Block (Alt-F4). Press Ctrl–Page Up, enter a variable number, and press Enter. WordPerfect turns off block highlighting and returns you to the editing screen. Press Alt and the variable number, and the characters appear in your document.

81. Recover cursor position _____ DOS/WIN

If you've ever lost your position in a file by pressing Page Down instead of the down arrow, it's easy to return to where you were. Press Ctrl-Home twice—Ctrl-Home is the WordPerfect for DOS GoTo key—and your cursor returns to its previous position.

In WordPerfect for Windows, choose Edit, Go To, Last Position to accomplish the same thing.

82. Insert boilerplate text in a flash _____ DOS

Many WordPerfect users create a macro to type in the closing signature to a letter (Sincerely, John Smith, Vice President Creative Control). But you don't need a macro to insert a signature or other boilerplate paragraphs. Just create a small file with the boilerplate text you wish to include and give that file a short name. Position your cursor where you wish to insert the file and Retrieve (Shift-F10) the file. Later, if you're promoted to Senior Vice President of Creative Control, it's easier to edit a file than a macro, even with WordPerfect's built-in macro editor.

This method takes a few more keystrokes than a macro, but you can get around that, too. Create a macro that retrieves your short text file. Then you have the convenience of a macro and the editing ease of a text file.

83. Mark text for tables of contents _ DOS/WIN

WordPerfect includes a feature that automatically generates a table of contents. But marking text for the table of contents can be tedious. If you use paired styles to format the headings that will later appear in the table of contents, include a table of contents code in the style. Use a different style for each level of heading.

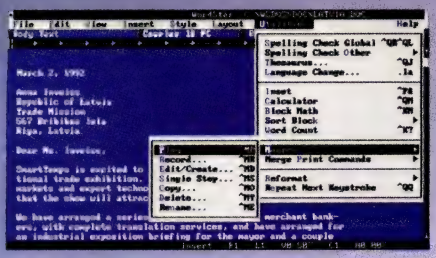
When you're creating the paired styles for headings in the Windows or DOS version of WordPerfect, select the comment that appears on the style-editing screen. Then, in WordPerfect for Windows, choose Tools, Mark Text, Table of Contents and enter 1 for a level 1 heading, 2 for a level 2 heading, and so on, and click on OK. In the DOS version, choose Mark Text (Alt-F5), TOC (1), and enter 1 if the heading is a major heading, 2 if the heading is a secondary heading, and so on. Before exiting the style definition, include any other formatting that you want to apply to headings.

84. Convert comma-delimited files ___ DOS/WIN

You want to use WordPerfect for Windows or for DOS to send mail-merge letters, but you keep the mailing list in a database. So you must convert information in your database to WordPerfect's secondary-merge format.

Fortunately, most databases can export data to a comma-delimited file. And it's easy to create a simple batch file to convert comma-delimited files to WordPerfect secondary-merge files.

In the directory on your path where you normally keep your batch files, create a batch file called WPMERGE.BAT. You can use WordPerfect to create it as long as you remember to save it as a DOS text file. It should contain a single line:



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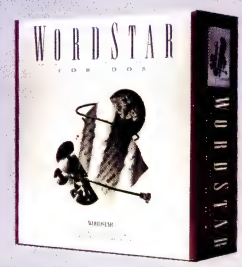

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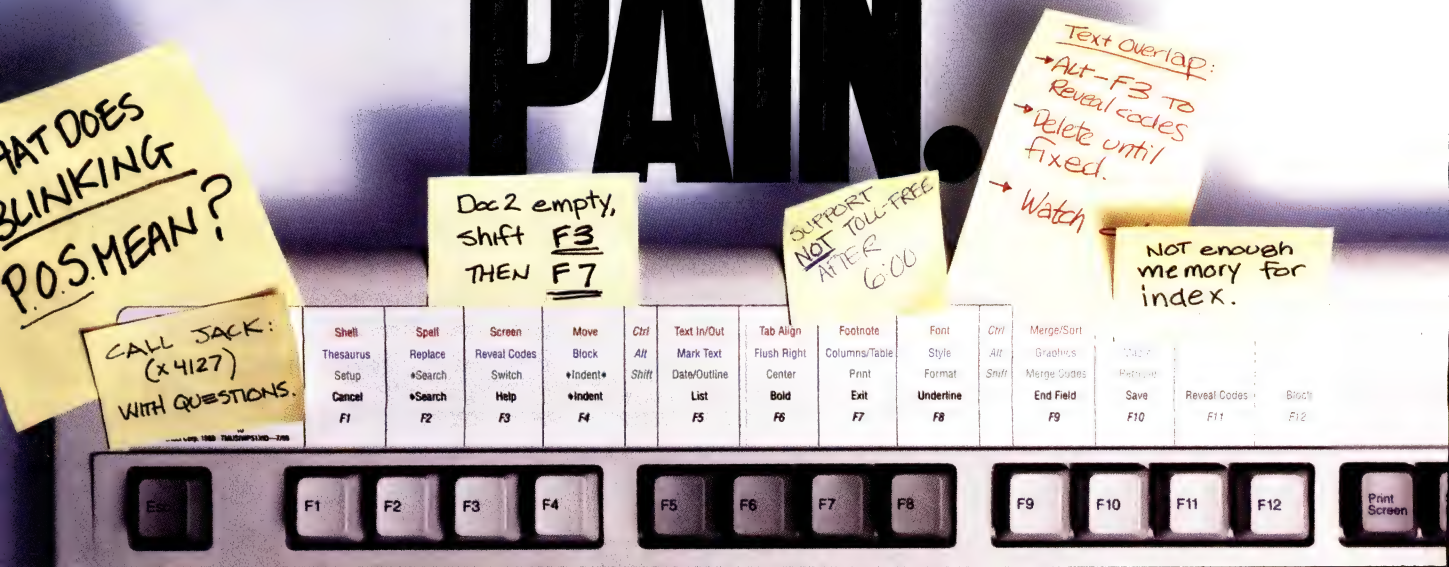

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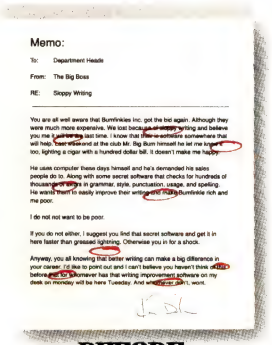

Memo:

To: Department Heads

From: The Big Boss

RE: Sloppy Writing

You are all well aware that Bumfinkles Inc. got the bid again. Although they were much more expensive, We lost because of sloppy writing and believe you me it ~~cost me~~ last time. I know that there's software somewhere that will help. Last weekend at the club Mr. Big Bum himself he let me know too, lighting a cigar with a hundred dollar bill. It doesn't make me happy.

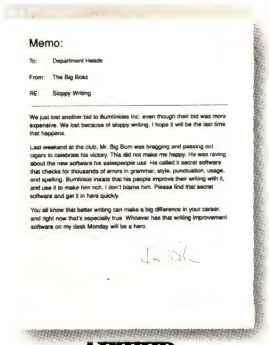
He uses computer these days himself and he's demanded his sales people do to. Along with some secret software that checks for hundreds of thousands of errors in grammar, style, punctuation, usage, and spelling. He wants them to easily improve their writing and make Bumfinkle rich and me poor.

I do not not want to be poor.

If you do not either, I suggest you find that secret software and get it in here faster than greased lightning. Otherwise you in for a shock.

Anyway, you all knowing that better writing can make a big difference in your career, I'd like to point out and I can't believe you haven't think of this before, that whoever has that writing improvement software on my desk on monday will be here Tuesday. And whoever don't, wont.

BEFORE


Memo:

To: Department Heads

From: The Big Boss

RE: Sloppy Writing

We just lost another bid to Bumfinkles Inc. even though their bid was more expensive. We lost because of sloppy writing. I hope it will be the last time that happens.

Last weekend at the club, Mr. Big Bum was bragging and passing out cigars to celebrate his victory. This did not make me happy. He was raving about the new software his salespeople use. He called it secret software that checks for thousands of errors in grammar, style, punctuation, usage, and spelling. Bumfinkle insists that his people improve their writing with it, and use it to make him rich. I don't blame him. Please find that secret software and get it in here quickly.

You all know that better writing can make a big difference in your career, and right now that's especially true. Whoever has that writing improvement software on my desk Monday will be a hero.

AFTER

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FOR DOS & WINDOWS

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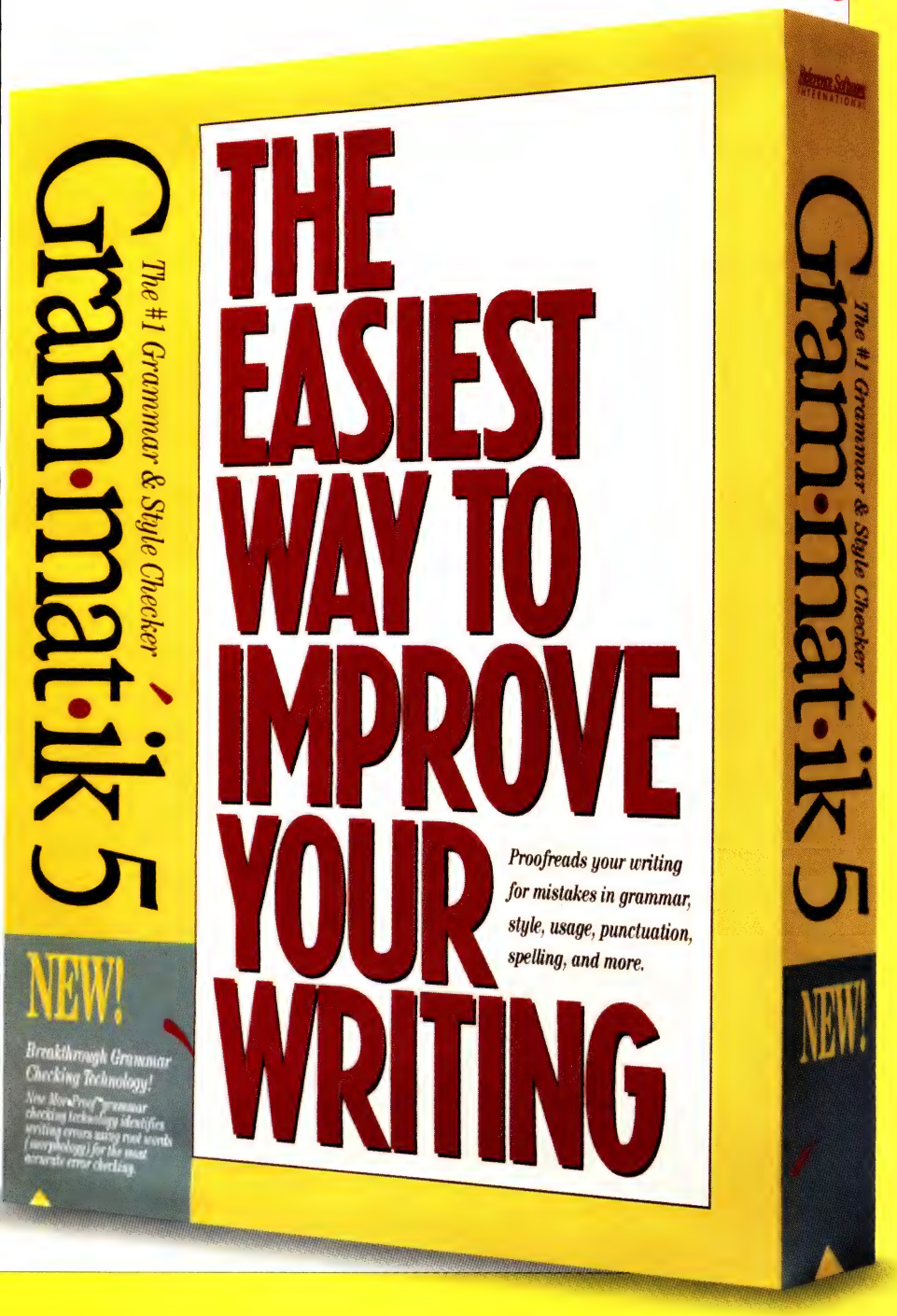

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Circle 126 on reader service card.

```
CONVERT %1 %2.SF 9 , {13}{10} "
```

If the directory that contains WordPerfect's CONVERT.EXE program is not in your path, then add the path information before CONVERT.

The number on the 5.1.Convert Utility menu for Mail Merge to WordPerfect Secondary Merge is 9. (If you have a different version of WordPerfect, substitute the number given on your version of the Convert Utility for WordPerfect to Secondary Merge.)

To convert a comma-delimited file to a WordPerfect secondary-merge file, change to the directory that contains the file and type WPMERGE followed by the filename and extension of the comma-delimited file, a space, and the filename—with no extension—that you wish to use for a secondary-merge file. For example:

```
WPMERGE NAMES.TXT MERGNAME
```

The Convert utility changes the comma-delimited file to a WordPerfect file with the extension .SF. In the example here, the file it creates is called MERGNAME.SF.

85. Create invisible place markers ____ DOS/WIN

It's convenient to leave place markers, such as ***, in a long document so you can easily find passages that you want to revise. But if you forget to remove the markers, they'll show up when you print the document.

Since WordPerfect can search for formatting codes as well as text, you can use the codes as place markers. Avoid codes that may be used for normal purposes, such as boldface and underline. Instead choose a format code that's not likely to be used in your document and that won't affect the printout. For example, you could use the code that controls the mixture of colors in hard copy (unless you have a color printer, that is). In the DOS version, press Ctrl-F8, Print Color (5), Other (O), and Exit (F7) twice. Then when you want to find the marker, press Search (F2), Ctrl-F8, Print Color (5), F2.

In WordPerfect for Windows, choose Font, Color, OK. To search for the color code, choose Edit, Search, Codes, Color, OK.

86. Make a modem-ready file _____ DOS

If you frequently send messages via modem, you know that saving documents from WordPerfect for DOS in ASCII format in your communications subdirectory saves time and effort online. However, it's a tedious procedure that's best done by this macro.

First, press Home, Define Macro (Ctrl-F10), and assign a key to the macro. At the prompt, give a descriptive name to the macro and press Enter. Because you pressed Home before Define Macro, you'll go directly to the macro-editing screen. Delete the {DISPLAY OFF} code and press Text Out (Ctrl-F5), T (for text), and S (for save). Next, type the path to your communications directory, C:\XTALK\, for example. Now press Ctrl–Page Up, and from the menu of macro commands, select {PAUSE}, Type .MSG to give the document a file extension of .MSG. Then end the pause by pressing Ctrl-V followed by Enter. This completes the macro, so press F7 twice to save it. When you're done, the macro should look like this:

```
{Text In/Out}tsC:\XTALK\{PAUSE}.MSG{Enter}
```

When you run the macro, it will pause and ask for a filename. After you supply one it will add the extension .MSG and save the file in ASCII format. If a file with the same name and extension already exists, you'll be asked if you want to replace it.

87. Transfer formatting in e-mail ____ DOS/WIN

ASCII is the standard format for exchanging text on e-mail services such as MCI Mail, but it sacrifices formatting, including fonts, headers, footers, page numbers, and more. Both versions of WordPerfect, however, let you preserve formatting when you transfer documents to other WordPerfect users. The transfer process also eliminates the need to remove hard-return codes ([HRt]) inserted during ASCII transfers.

Before you upload a file, save it. Then exit WordPerfect and load the Convert utility (usually in the Learn subdirectory). Enter the file's name at the Name of Input File? prompt and a new name for the converted file at the Name of Output File? prompt, and press Enter. Select WordPerfect to Another Format (1) followed by Seven-Bit Transfer Format (6). The resulting file cannot easily be read onscreen, but it is ready to upload and download like any plain ASCII file.

To convert a downloaded file, load WordPerfect and Retrieve (Shift-F10) the file. You'll see a message that WordPerfect is converting the file from DOS format. Block-delete any e-mail information, such as the sender's name, from the top and bottom of the file. This editing restores the message to its 7-bit transfer format. Next, press Text Out (Ctrl-F5), DOS Text (1), and Save (1) to save the file as a DOS text file. Run Convert again, and select Seven-Bit Transfer Format to WordPerfect (7) to convert the file. You can now retrieve the file as a clear, formatted document in WordPerfect. The final step is to go to the end of the document and remove the end-of-file marker (^Z).

88. Work around Escape's limitations _____ DOS

The Escape function in WordPerfect for DOS, which normally repeats a keystroke, command, or macro the number of times you specify at the Repeat Value = prompt, doesn't work with the backspace key. But if you assign a single backspace keystroke to a macro, you can repeat the macro a specified number of times with Esc. You might find this useful for such operations as erasing a certain number of digits in the middle of a product code while typing lists of data.

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Automatic data integrity and validation at the database level.	YES	NO	YES	YES
Directly .dbf file compatable.	YES	YES	NO	NO
Full network support without programming.	YES	NO*	NO	YES

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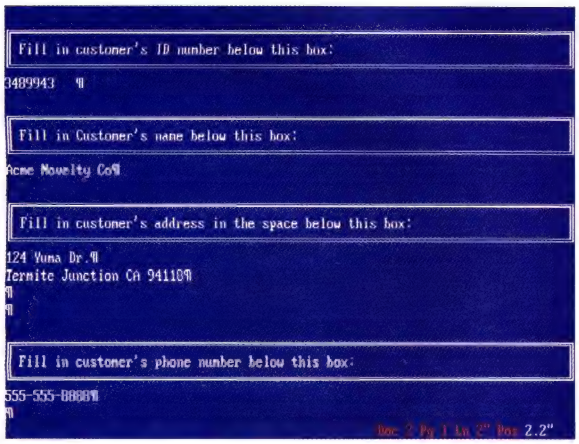

TIP 91 On preprinted forms in either version of WordPerfect, use nonprinting comment boxes to instruct users to type information after the formatting codes that position the text. You can add as many comments as you like.

Press Esc, enter the number of digits, and start the backspace macro. Alternatively, map the backspace macro to a convenient Ctrl-*key* combination, such as DOS's Ctrl-H backspacing assignment, and use Esc to repeat the command.

89. Exit WordPerfect in a flash _____ DOS

It can take up to five keystrokes to exit WordPerfect for DOS if you're saving a file. This handy macro uses only two keystrokes.

To define this macro, start WordPerfect and retrieve an existing file. Press Macro Define (Ctrl-F10), Alt-X (or any Alt-*key* combination you prefer); assign a name (Exit, for example) and press Enter. Then press Exit (F7), Save document (Enter or Y), accept existing filename (Enter), replace old file with new (Y), and leave program (Y). Normally, you would press Ctrl-F10 again to end the macro, but since this sequence takes you back to the DOS command line, the macro definition ends when WordPerfect ends. Now go back into WordPerfect, call up a file, and press Alt-X. The file is saved and WordPerfect terminates.

90. Avoid AUTOEXEC.BAT line breaks ___ DOS/WIN

When you edit your AUTOEXEC.BAT file or other batch files in WordPerfect for DOS or for Windows, the program breaks long lines—a long PATH statement, for example. If you then save AUTOEXEC.BAT with the Text In/Out (Ctrl-F5) function in DOS or with Save As in Windows, WordPerfect splits the command line as it appears on the screen and creates two lines in the AUTOEXEC.BAT file. The second line is meaningless, of course, since it doesn't contain a command.

To edit and save an AUTOEXEC.BAT file that contains long lines, save it as a generic word processor file. Then soft carriage returns are converted into spaces instead of hard returns.

91. Fill in preprinted forms _____ DOS/WIN

You can easily fill in preprinted forms with both versions of WordPerfect by using the Advance feature to position data on the preprinted form. But with lots of hidden Advance codes in a document, it's all too easy to position fill-in text before instead of after an Advance code. To avoid this problem, use two nonprinting comments to enclose each Advance code. Leave the first comment box blank, or use it to display a message like "Advance code follows." In the second comment box, identify the data to be entered after the box—for example, Customer ID Number. The Reveal Codes screen for a data entry point might look like this:

```
[Comment] [AdvToLn:2"] [AdvToPos:3.75"] [Comment]
```

Using comment boxes takes up room on the screen, but that doesn't matter because you can place as many comments on a page as you like.

92. Display carriage returns _____ DOS/WIN

When downloading files by modem, it's hard to know which lines end with a hard return unless the hard returns are displayed onscreen.

Use Setup (Shift-F1) with WordPerfect for DOS or File, Preferences with the Windows version to select any of the 1,700 extended characters as the hard-return character—just type a number into the proper entry in the preference screens. Among those that can be displayed on EGA and VGA screens are the paragraph mark, which looks like a backward P (20); a right-pointing double angle bracket character (175); and a small dot that displays in the middle of the line (249).

To specify a hard-return character in WordPerfect for DOS, choose Setup (Shift-F1), Display (2), Edit-Screen Options (6), and Hard Return Display Character (4). At the prompt, press Alt plus the character number (20 for a paragraph mark, for example) to enter the character. Press Exit (F7) to return to the document screen.

In the Windows version, choose File, Preferences, Display and position the cursor in the Hard Return Character box. Either type in the numbers with the Alt key or press Ctrl-W to bring up the Characters dialog box, which will display hundreds of possibilities.

93. Reverse search directions _____ DOS

After you press F2 to start a forward search, press the up arrow key to change to a backward search. Press the down arrow to change back to a forward search. This also works with Replace, and it's the only way to do a backward search-and-replace in DOS.

94. Spell-check your dictionaries ____ DOS/WIN

WordPerfect users can save disk and memory space spell-checking a supplemental dictionary before installing it. WordPerfect's main dictionary contains a surprising number of technical, professional, and other special-

HEFTY HEFTY HEFTY

WIMPY WIMPY WIMPY

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Type 1 fonts	180	0
PageMaker 4.0 filter	Yes	No
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ized terms that are duplicated in supplemental dictionaries. By quickly checking a supplemental list before adding it to disk, you can easily eliminate duplicated words. Just delete any words that are not flagged by the speller or add the unflagged words, which puts them in your main supplemental dictionary.

95. Add special characters quickly ___DOS/WIN

The graphics menus in the WordPerfect Characters dialog box make it simple to insert foreign-language characters, symbols, and typographic marks by pointing and shooting. But for many of the most common characters, you can enter a couple of mnemonic keystrokes instead of using the mouse to display different character sets and then clicking on the character you want.

For example, if you want to enter a ½ symbol, press Ctrl-W, /, 2. The dialog box selects the character set that has ½ in it and highlights it. Choose Insert and Close to insert the ½ symbol and return to your document.

In the DOS version, press Ctrl-V and then the two characters that make up a single character.

Other characters and their shortcuts include:

Character	Shortcut Keys
¼	/4
•	*.
●	**
∘	*o
○	*O
—	-- or m-
™	tm or TM
®	ro or RO
©	co or CO
£	L-
¢	c/
ñ	n~

There are many others. To find out if the special character you need has a shortcut, press Ctrl-W in Windows or Ctrl-V in DOS and type the two characters that come closest to looking like the components of the single character, such as "c" and "," for a ç. It doesn't matter which of the two characters you type first.

96. Exit message secrets _____DOS

When you press the Exit key (F7) in WordPerfect for DOS, the program asks if you want to save your file and may also display the message "Text was not modified." At this point, WordPerfect means exactly what it says—the text was not modified—but other things might have been changed. For instance, if you save a document with underlining or boldface codes, and then delete these formatting codes and exit the document, you often get the "Text not modified" message. To be safe, you should always save your documents, even when WordPerfect says you don't need to.

97. Prevent disappearing codes _____WIN

In WordPerfect for DOS, you can backspace or use the Del key without deleting formatting codes such as those for boldface or italics. WordPerfect for Windows, however, will delete these formatting codes without any warning unless you make a change in the Preferences dialog box.

Choose File, Preferences, Environment and check the box labeled Confirm on Code Deletion. You must exit WordPerfect and run it again for the change to take effect, but the next time you start to erase a formatting code, WordPerfect will present a dialog box asking you to confirm the deletion.

BUG SWATTERS

98. Know probable UAE causes _____WIN

A possible source of Unrecoverable Application Errors (UAEs) in WordPerfect for Windows is some 256-color display drivers. If you're using a driver that supports 256 colors and WordPerfect for Windows is crashing, try changing to a 16-color driver.

Other possible sources of UAEs are insufficient free space on your hard drive for the TEMP directory (4MB is usually enough), the FILE= line in CONFIG.SYS being set to fewer than 60, insufficient environment space (try 512 or 1,024 bytes), and conflicts with some screen blankers.

99. Watch the clock _____WIN

If a WordPerfect for Windows macro you've used in the past suddenly generates an error message that says it doesn't exist or that it's out of date, check the time. You may be a victim of the Cinderella bug.

Macros often exhibit problems running between midnight and 1 a.m. and during the first minute of any hour. WordPerfect is working to fix the problem, but until it's corrected, the solution is to reset the clock on your computer.

100. Fix bloated files _____WIN

If you find that the size of a file edited with WordPerfect for Windows is growing beyond its limits and you get UAE messages while working with it, you may be a victim of file bloat, in which WordPerfect misreads its own header information.

The solution is to open a new document. Enter a single space—or any other character—and then delete it. Then use File, Retrieve to import the bloated document into the new file. Finally, save the file with the bloated file's name, overwriting the oversize version. ◪

IN A CATEGORY OBS
AND LIGHTER, COMPAQ W
ANOTHER ADJ

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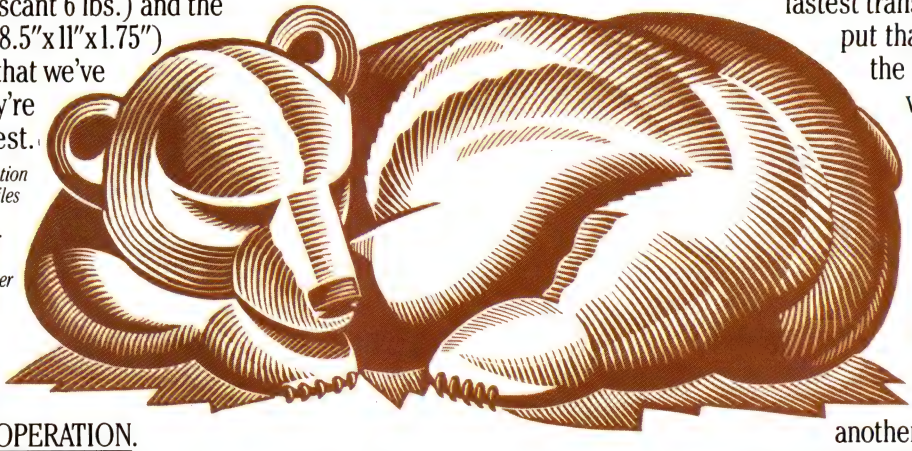

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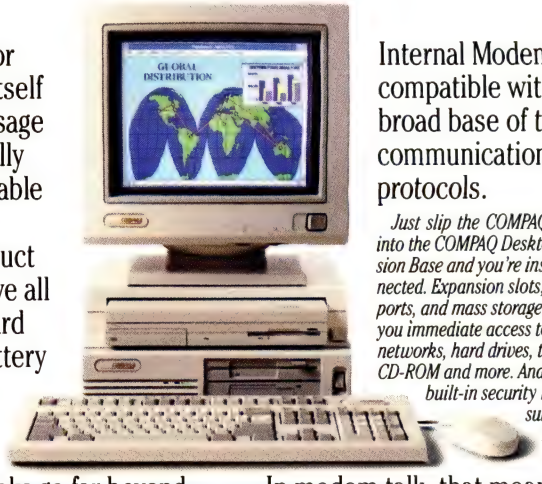

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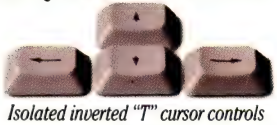

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Low-Cost, High-Speed Modems

NOW THAT HIGH-SPEED MODEMS have come down in price, it may be time to consider replacing your 2,400-bps unit. While 9,600-bps modems aren't yet commodity items, they are quickly becoming so—you no longer have to cash out your mutual funds to purchase one. And depending on your online activities, a high-speed modem can actually save you money in the long run. What could be more attractive than a product that pays for itself?

We searched the market to find modems, both internal and external, that support the V.32 protocol and that have a suggested retail price below $500. We located seven for review. By the time you read this, however, price cuts will likely have brought other modems into this range as vendors compete for market share.

HIGH-SPEED ISSUES

Must you replace your familiar 2,400-bps modem with a faster one? Not necessarily. There are several issues to consider before purchasing a higher-speed device.

How do you spend your time online? If most of it is spent interactively—that is, reading a screen, scrolling to the next one, and so on—you won't benefit much by trading in your 2,400-bps modem. Connect charges for 9,600-bps modems are higher, and while the high-speed unit will get the data on your screen more quickly, you won't be reading any faster than

PHOTOGRAPHS BY ROBIN GINSBERG

By Dale Lewallen

before. But if your online time is spent downloading large files or transferring information from a branch office back to the main office, a high-speed modem can save you time and money. Data is transferred four times more quickly with a 9,600-bps modem—often faster, by using data-compression techniques—and greater speed means you spend less on long-distance and connect charges.

Likewise, high-speed communications are an absolute requirement for anyone who wants to run Windows on a remote computer. Because of the graphical nature of Windows 3.0, prodigious amounts of data are sent over the line between the two machines. In our experience, we found 9,600 bps to be the slowest acceptable speed for running Windows applications remotely.

Can you access your favorite online service at the higher speed? Surprisingly, in spite of the availability of relatively low-cost, high-speed modems, a number of services don't yet support dial-in at the higher port speed. While CompuServe and GEnie currently support 9,600-bps nodes, for example, MCI Mail and Prodigy did not at press time. BBS operators have been the most progressive group when it comes to moving to higher communications speeds, and most offer 9,600-bps communications.

Can your computing environment support high-speed communications? Some combinations of hardware and software aren't up to the rigors of high-speed communications. While most 286-based and above computers that run DOS won't have any trouble running communications software at 9,600 bps and even higher, those same machines in a Windows or OS/2 environment might be unable to handle critical communications interrupts promptly and accurately.

MODEM STANDARDS

If you think you're a candidate for a high-speed modem, the next step is to investigate the international standards. The V.32 specification established by the CCITT, the international communications standards organization, is how 9,600-bps modems "talk" with one another. Not all modems conform to this standard, though—some vendors use nonstandard modulation schemes to keep costs down. The CompuCom Speedmodem, for example, uses a proprietary modulation scheme that requires that you be connected to another Speedmodem to communicate at 9,600 bps. (CompuCom also makes devices that conform to CCITT standards for modulation.) By choosing a modem that supports the V.32 standard (as all those reviewed here do), you'll be assured of connecting to any other modem that supports that specification.

Next, check to see if the modem supports the V.42 protocol for error control. This ensures that the modems will communicate without errors in transmission. If an error does occur, the bad packet—or block of data—will be re-sent automatically. Not all of the modems we reviewed here support V.42. Given a choice, we recommend devices that support this protocol because they provide higher throughput than those that do not.

The Swan 9600 External Modem covers all the bases, providing support for the most widely used communications protocols.

If the modem supports V.42, it will also support V.42bis, the protocol for data compression. V.42bis can compress data at a ratio of up to 4 to 1. Depending on the data—worksheets and database files compress better than other data, for example—you'll see a significant improvement in throughput.

(One note on data compression: Many modems today have implemented data compression using a de facto standard called MNP5. However, MNP5 isn't as powerful or as flexible as V.42bis: Its data-compression ratio is limited to 2 to 1, and it isn't very smart about sending files that have already been compressed with software utilities such as PKzip or LHA. MNP5 has even been known to expand files that it's trying to compress.)

The modems reviewed here are an assortment of both internal and external devices. Each type has its advantages. An external model can be transported easily from one machine to another and used with almost any computer or terminal device. External modems also feature front-panel LEDs, which provide important clues as you try to figure out why you can't connect. Internal modems, on the other hand, don't require a serial port or take up valuable desk space. Because they connect to the PC through the system's internal bus expansion cards, however, internal devices can be used only for PCs.

HOW WE TESTED THE MODEMS

Performance isn't everything in a high-speed device. In addition to measuring speed, we examined the quality of the documentation. If the vendor is cutting the price close to cost, comprehensible instructions may be left out when the modem ships. We also tested compatibility by connecting each modem to a series of V.32 modems, including several CompuServe V.32 nodes and a handful of bulletin boards throughout the country. While this

method of testing doesn't subject each modem to identical conditions as a line simulator would, it approximates the situation you'll face when you get home with your new modem.

We also examined the quality of construction and how easy it was to set up the modem. An important test was whether we could connect the device to several other modems without having to modify our default communications program, which was configured to work with a Hayes Ultra 96 9,600-bps modem. Though not exhaustive, this test helps determine how compatible the modem is with the Hayes AT command set.

SWAN 9600 EXTERNAL MODEM

The Swan 9600 External Modem supports both the V.32 and V.42/V.42bis protocols. It also supports MNP levels 2 to 4 for error control and MNP5 for data compression, allowing communication with devices that do not support V.42/V.42bis. Installing the unit was easy, as was connecting to other services and modems.

The modem is packaged in a sturdy, flat, black case with a series of front panel lights to indicate the status of the call. Interestingly, while most other modems in this class are housed in plastic cases, the external 9600's case is metal, so it will stand up to a lot of abuse. There is no volume control for the external speaker, but you can adjust the sound using software commands.

The Swan 9600 ships with a copy of Flashlink communications software to get you started. Although few modem manuals are worthy of commendation, Swan gets high marks for discussing how the various protocols work and how you should configure your software to take the best advantage of them. The manual also has a helpful section on how to troubleshoot stubborn communications problems.

$399 ■ Swan Technologies ■ 3075 Research Dr., State College, PA 16801 ■ (800) 468-9044, (814) 238-1820

The Cardinal Technologies 9600V32 was the only internal modem we tested that features an external volume control.

CARDINAL TECHNOLOGIES 9600V32

Cardinal Technologies' 9600V32 is a half-length internal modem card that supports the V.32 protocol and MNP levels 2 through 4, but does not support V.42/V.42bis. Like the Twincom 96/42, the modem can be set to work on COM1 through COM4. The Cardinal 9600V32 also includes Flashlink communications software.

The 9600V32's documentation is above average. The manual contains a lucid discussion of how to set up the modem to work with your COM ports and several suggestions about how to address (no pun intended) IRQ conflicts that invariably occur when you stuff your PC full of interrupt-driven peripherals (such as mice and modems). The 9600V32 comes from the factory set up to work with COM2, but the dip switches are easy to change, even from outside the computer. Unique to the Cardinal unit among the internal modems we tested was an external volume control. Sure, it's located behind the computer, which means you'll have to reach around for it, but it's there if you don't want to modify your communications software to adjust the volume.

We had no trouble connecting with the Cardinal 9600V32. But even considering the good documentation and ease of installation, $499 is expensive. If you're shopping for an internal modem, check out the offerings from Lightning Communications and Image Communications first.

$499 ■ Cardinal Technologies ■ 1827 Freedom Rd., Lancaster, PA 17601 ■ (800) 233-0187, (717) 293-3000

ATI TECHNOLOGIES 9600etc-e

We were generally unimpressed with the low-cost external modems in this review until we saw ATI Technologies' 9600etc-e. This modem supports V.32, V.42, and V.42bis along with MNP levels 2 through 5. The black plastic case features a series of LEDs to show the modem's connect speed, whether data compression is enabled, and other communications details. The externally mounted volume control—in the front of the modem—earned the unit bonus points: All external modems should have a way to adjust the volume, but many rely on software to do it.

ATI ships the 9600etc-e modem with one of the better manuals that we saw during the course of this review. It's well organized and contains all the information you'll need to get started.

As with other external modems, setup was a matter of connecting the modem to the computer's serial port via a cable, plugging in the power brick, and hooking the modem to the phone line. Once installed, the 9600etc-e performed well, and no adjustments to our communications software's setup string were necessary.

ATI is a diversified company that has a line of well-respected products, including a graphics board that won a *PC/Computing* Most Valuable Product award in 1991. The 9600etc-e is a solid modem and a great value in high-speed communications.

$499 ■ ATI Technologies ■ 3761 Victoria Park Ave., Scarborough, Ontario M1W 3S2 ■ (416) 756-0718

MICRO DIRECT 9600 EXTERNAL MODEM

At the lower end of the price spectrum, it's often difficult to determine just where your modem is coming from. When you purchase a modem from Hayes, Intel, or USRobotics, for instance, you know that the company is both the manufacturer and the distributor of the product. The modem in the Micro Direct box, however, is labeled ACEEX Modem 9600.

According to the packaging, the Micro Direct 9600 supports the "CCITT V.42 & MNP5bis data compression" standard. That's news to us since there's no such thing as "MNP5bis." In reality, the modem supports V.32, V.42/V.42bis, and MNP levels 2 through 5.

Like the Swan 9600 modem, the Micro Direct 9600 has a steel case. This external device includes a copy of the COMit communications software—though the manual states that "you may . . . prefer to purchase the recommended BitCom communications package." A sticker on the box says the modem "boosts throughput with new MNP7 software," but because no software manual is

The Real Cost of a High-Speed Modem

When calculating the cost of a modem, the purchase price is only the beginning. Just as important are operating costs, which can vary dramatically as you move from a slower to a faster unit.

Consider the following scenario. Your company transfers 5MB of data each week between offices in Los Angeles and Chicago. You transfer the data at night to save long-distance costs, and each minute of long-distance time sets you back 25 cents. You have the option of purchasing one of three modems: a $699 Intel 14.4EX V.32bis modem that transfers data at 14,400 bps; a $299 Lightning Communications LightCom 96 (see main story); or a commodity 2,400-bps modem for approximately $100. Initially, the cheapest modem seems like the best choice. But is it?

The numbers below show that the faster, more expensive modems are cheaper in the long run compared with the 2,400-bps unit. Mileage may vary; evaluate your situation to find the modem that provides the best return on your investment.

Here are some tips for keeping your online costs low, no matter what speed of modem you use.

■ If you're going to send large files, compress them with one of the popular compression utilities such as PKzip or LHA. The smaller the file, the faster it will be transferred. An added benefit is that compression programs bundle a number of files into one (called an *archive*) that is easier to send than multiple files.

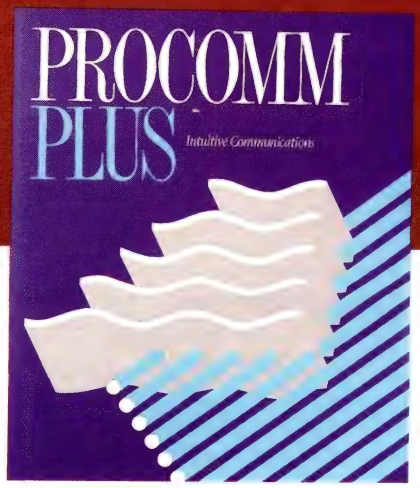
■ If you're working with a BBS or an online service like CompuServe or GEnie, see if an offline message reader is available. These programs go online for you, retrieve all your messages, and log off the service. You can then read and respond to your messages at your leisure. When you're done, the program uploads your responses. This method is much faster and cheaper than trying to read and respond to messages while you're online and the meter's running. Such programs are available for all of the popular BBS systems, CompuServe (Tapcis, ATO, CISOP), and GEnie (Aladdin).

■ Automate your data-transfer tasks to take advantage of lower long-distance charges at night. Several communications packages and utilities let you script data transfers and even let you specify when you want the transfer to occur.

■ If you access only services that charge per message rather than by time online (MCI is a good example), you might not need a faster modem. Since MCI charges by the size and number of messages that you send, you won't save money by purchasing a faster modem. Though MCI will ultimately move to faster modem service (it currently offers access only at 2,400 bps), that just means that you'll be on and off faster, not necessarily cheaper.

	Intel 14.4EX	LightCom96	Generic 2,400-bps
Initial cost	$699	$299	$100
Minutes per week to transfer 5MB of data	59.52	86.81	347.22
Long-distance cost per week at $.25 per minute	$14.88	$21.70	$86.81
Long-distance charges for one year	$773.76	$1,128.40	$4,514.12
Total cost of the modem	$1,472.76	$1,427.40	$4,614.12

Out of the prairie comes proof that a higher level of communication has arrived.



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Circle 280 on reader service card.

Priced at $440, the Micro Direct 9600 external modem supports V.32, V.42/V.42bis standards and MNP levels 2 through 5.

provided, we could find no other information about this feature.

$440 ■ Micro Direct International ■ 18019 Sky Park Circle, Suite F, Irvine, CA 92714 ■ (800) 359-1628, (714) 251-1818

AMT STAR 9632i

The 9632i is a full-length internal modem that supports the CCITT V.32 protocol. Although several modems in AMT's line add support for the V.42/V.42bis protocols, the 9632i is the only one that meets our under-$500 price criteria.

Installation was straightforward, though more complicated than it is for an external modem. As is necessary when you add any expansion card to your system, you must first remove the PC's cover and identify an available slot. You might need to set a couple of jumpers on the AMT modem, but the process is simple and well documented. By default, the 9632i arrives configured to use COM2 and IRQ3. Since our test PC had a mouse installed on COM1, we didn't need to reset any of the jumpers.

Once installed, the 9632i worked well. Like other internal modems, it lacks LED indicators that show the status of the call. But if you have only one serial port that you'd rather dedicate to a mouse, scanner, or other peripheral, the internal modem is an attractive option.

The 9632i includes a software package called Quick Link II. Documentation for both the communications software and the modem is much better than average. Both manuals are fairly descriptive and provide useful information. The modem's manual makes several small errors (for example, "9600 Baud" should be "9600 bps"), but given other manuals that we've seen, we're willing to forgive a few minor transgressions.

$499 ■ AMT International Industries ■ 16571 Gemini Lane, Huntington Beach, CA 92647 ■ (714) 375-0306

LIGHTCOM 96

Lightning Communications' LightCom 96 is a half-length internal modem that supports the V.32 and V.42/V.42bis standards. The device also supports MNP5 levels 2 to 5 for communication with those modems that don't use V.42/V.42bis.

Included in the package are several subscription offers from vendors of online services such as Dow Jones, CompuServe, and GEnie. All of the services support V.32 modems, so you can get started communicating at high speed as soon as your modem is set up.

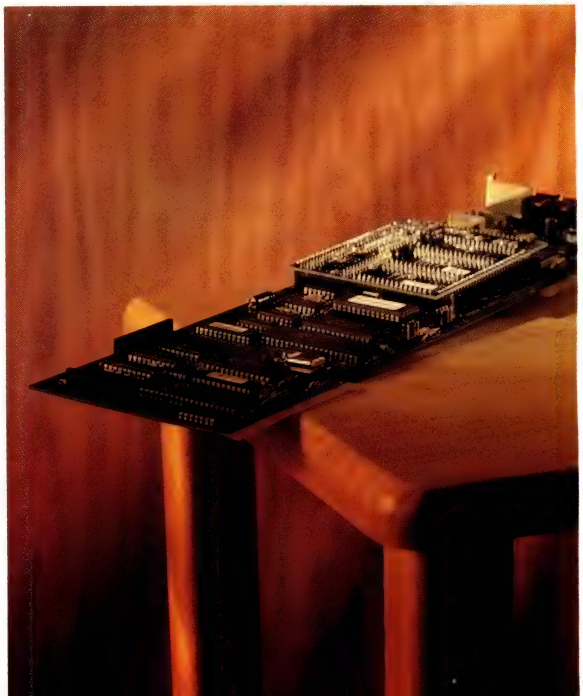
As with the AMT 9632i, you need to verify that a couple of jumpers are set correctly. Unfortunately, documentation concerning this critical step was incorrect in the manual; an errata sheet contains the correct information. The factory default is for COM1 and IRQ4, but since our mouse was loaded on COM1, we had to change the jumpers so the modem would use COM2 and IRQ3.

Once the jumpers were set correctly, we just slid the modem into a free slot in the PC. Because of its diminutive size, you can install the device where a full-length card might not fit. Once installed, the LightCom 96 performed very well, and we connected under all of our test conditions.

The documentation that accompanies the LightCom 96 is serviceable, but most of its 60 pages are devoted to listing the AT commands that the modem supports. While it's important to list the commands, more information on how to use them would be welcome. LightCom 96 comes with the Quick Link II communications software package.

$299 ■ Lightning Communications ■ 36 Argonaut, Suite 150, Aliso Viejo, CA 92656 ■ (800) 433-4420, (714) 457-8001

One of the more expensive internal modems we tested, the full-length Star 9632i from AMT International was simple to install.



TWINCOM 96/42

Image Communications' Twincom 96/42 supports V.32, V.42/V.42bis, and MNP levels 2 to 5, all in a half-length internal modem and at an attractive price.

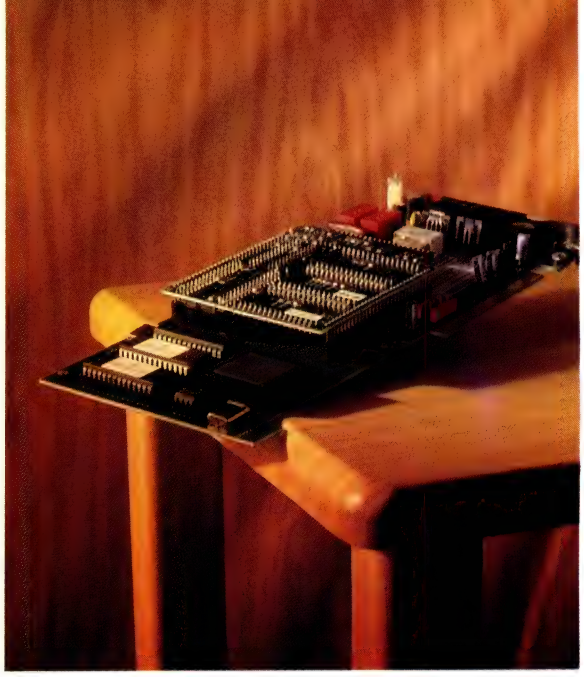
Like the LightCom 96, the Twincom 96/42 includes introductory offers from online vendors Dow Jones, GEnie, and CompuServe. The Twincom 96/42 does not include communications software, however, so you'll need to find a program elsewhere.

Installing the Twincom was simple. As with the other internal modems, the first step was to make sure it was configured for the test computer. Interestingly, the factory default is for COM4, and while we are glad the modem offers support for COM1 through 4, we think COM4 is an odd choice for the default: Most users are going to use the modem on either COM1 or COM2. On the other hand, changing the Twincom 96/42's COM and IRQ assignments was easier than it was on the other internal modems because the Twincom uses slide switches instead of jumpers.

Another interesting feature of the Twincom 96/42 is the jumper that controls the volume of the modem's speaker. Although you can't adjust the volume externally (except, of course, via software commands), you'll be glad you can turn it down, since the speaker is probably the loudest that we heard from an internal modem. The board performed as advertised, connecting correctly with all the devices that we tested.

The documentation included with the Twincom 96/42 was useful, but it provided only sparse descriptions of how the modem works and how to use various commands. Like the documentation included with the LightCom 96, the manual lists command after command in a reference section that takes up more than half the manual.

At $299, the diminutive LightCom 96 from Lightning Communications is a very good value in the internal modem category.



Though it lacks communications software, the $299 Twincom 96/42 is a great buy among the internal modems we reviewed.

$299 ■ Image Communications ■ 6 Caesar Place, Moonachie, NJ 07074 ■ (800) 666-2496, (201) 935-8880

DIAL M FOR MODEM

Most of the inexpensive modems we looked at performed as advertised. However, the quality of the documentation, the installation instructions, and the vendor information varied greatly. Considering the poorly written manuals and inconsistent information, we're tempted to recommend that you spend the extra money for a modem with better documentation. Several vendors sent us modems that we would have expected to see three years ago, when users were willing to tolerate poorly written manuals and shoddy packaging.

A few modems, however, stand out as excellent values in this otherwise ho-hum crowd. In the internal modem category, Lightning Communications' LightCom 96 tied with Image Communications' Twincom 96/42. Both offer all the CCITT compatibility that we believe is important, and both sell for a low $299. Each modem has a drawback, however: The LightCom 96 supports only COM1 and COM2—a bummer if you have other devices such as a mouse or a scanner already attached to those ports—and the Twincom 96/42 doesn't include communications software. Our vote for an external unit is the ATI 9600ETC-E. Although its cost puts it at the top of our price range, it's a well-engineered modem distinguished by its helpful manual and predictable behavior.

If a 9,600-bps speed demon makes sense for your needs, make your move. While prices are sure to continue falling, you can begin to enjoy the speed, time, and cost savings right now. Sure, if you wait, prices will drop further, but why spend another month or year poking along at 2,400 bps? ◪

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The Great Crash Of '91.

Not long ago, the PC world was shaken by the news that a surprisingly well-known communications package had crashed while attempting high-speed file transfers. It was not a pretty sight.

After testing different comm programs, the editors of *PC Magazine* reported that *"Procomm Plus®* locked up several times during our testing of high-speed file transfers. During our Character-based ZModem tests, on an 8-MHz AT equipped with a 16550A UART, it consistently froze at every port speed faster than 38.4 Kbps on the receiving side of the link."

This episode proved that you can't be too careful before investing in comm software. It also proved, once again, that you can't go wrong with Crosstalk.®

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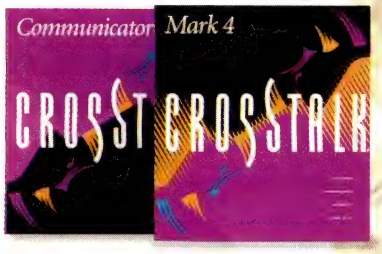

PC Magazine tests, but it was one which the editors of *PC Magazine* applauded for performance, price and flexibility.

As for the feature-rich Crosstalk Mark 4, the editors commented that "...it's a real bargain for all it accomplishes. Corporate managers who require features like a powerful script language, a variety of terminal emulation selections, and network communications capabilities will appreciate this product."

The editors of *Software Digest* drew a similar conclusion. They gave Crosstalk Mark 4 the only 4-star rating in their ranking of communications packages. And while Crosstalk Mark 4 proved to be an unparalleled program for power users, its sister product, Crosstalk Communicator, also scored highly in the *PC Magazine* tests.

Crosstalk Communicator received points for "...matching its higher-end sibling, *Crosstalk Mark 4,* practically score for score." It provides "...a fast, flexible alternative for the budget-conscious, particularly anyone in an organization already using *Crosstalk Mark 4,* because it can use scripts developed in that program."

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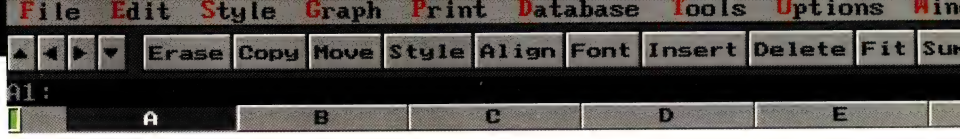
April 1991 Crosstalk Communicator · April 1991 Crosstalk Mk.4 · April 30, 1991 Crosstalk Mk.4 Version 2.0 · ★★★★ Vol. 7 No. 12 1990 Crosstalk Mk.4

How To Avoid A High-Speed Comm Crash.

Circle 120 on reader service card.



The New Quattro Pro for DOS:

SMART AND GRAPHICAL

Version 4.0's new features and improved efficiency give Windows spreadsheets a run for the money.

PLAIN AND SIMPLE, Quattro Pro 4.0 from Borland is the best DOS spreadsheet you can buy.

Earlier versions of Quattro Pro, despite their sophistication and innovative features, were dismissed by many as clones of market leader Lotus 1-2-3. And since Quattro Pro's stock in trade was its superset of 1-2-3 features (a 1-2-3 interface is still optional), the fates of 1-2-3 and Quattro were intertwined. No longer. Quattro Pro 4.0, due for release in the first quarter of 1992, is a mature DOS spreadsheet that is much more than a 1-2-3 imitator.

For starters, Borland realizes that although it's a GUI world, you don't need Windows to survive. Quattro Pro's snazziest new feature is its SpeedBar (which comes in two configurations, according to which mode you're in). The SpeedBar is similar to the toolbars in many Windows applications. Other improvements include more analytical horsepower and a greater focus on user efficiency.

By Sebastian Rupley

Raising the Bar

Quattro's new SpeedBar is located at the top of the screen, like the toolbars in 1-2-3 for Windows, Excel, and Word for Windows. It's a big improvement over the stripped-down mouse palette of previous Quattro versions. The SpeedBar is customizable, so you can attach macros to new buttons you create and name. A button labeled Bar at the end of the standard toolbar calls up additional buttons.

In Quattro Pro's standard Ready mode, the SpeedBar includes buttons for common operations such as Copy, Move, and Align. There are useful formatting buttons, such as Style, Font, and Format. Format changes numeric formats like currencies and percentages. The new toolbar also has a TurboSum button, which calculates automatic sums of rows and columns like its counterparts in Windows spreadsheets. And a very useful button called Fit automatically sizes any block within a worksheet for a perfect fit.

In Edit mode, a slightly altered SpeedBar appears, this one designed to make creating @ commands easier. A button that's labeled @ displays a list of @ functions for entry on the input line; others labeled +, -, *, and / enter

the appropriate arithmetic symbols; and a Macro button displays a list of menu-equivalent macros. There are even buttons for inserting opening and closing parentheses.

The standard buttons in both modes are tremendous timesavers. And since it's easy to rename and customize buttons (you can even change their colors), remembering what they do is a cinch.

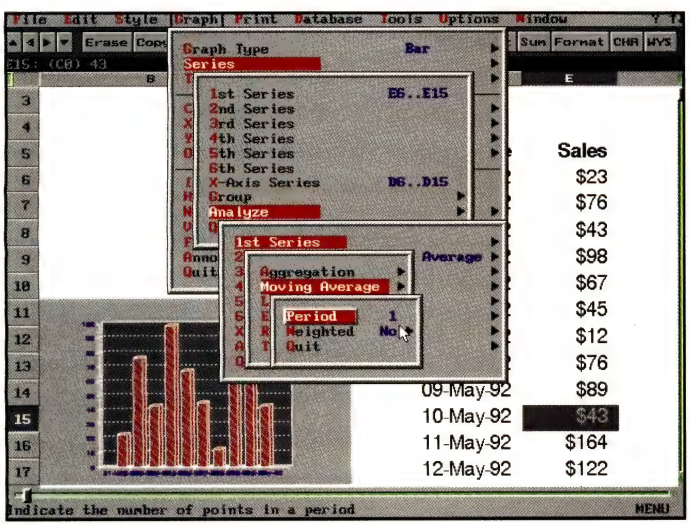
Even so, Quattro Pro's SpeedBar isn't quite as advanced as those in Windows products. For example, prerelease versions of Borland's Quattro Pro for Windows let you drag and save selected buttons as parts of individual worksheets. Excel does this, too. And 1-2-3 for Windows displays more buttons (denoted by much more creative and telegraphic icons) on one toolbar than Quattro Pro 4.0's toolbar does. Still, it's a pleasure to see a DOS spreadsheet drawing inspiration from the latest Windows applications.

Graph Analysis on the Run

In character-based spreadsheets, worksheets and graphs have traditionally been separated by a Great Wall: You either work on your data or you work on your graph, but rarely do you work on both at once. Quattro Pro was one of the early spreadsheets to automatically update graphs based on changes to associated data, and in Quattro Pro 4.0, Borland has come up with even more useful associations between data and graphs.

Conveniently placed one step away from your graph on the Graph menu, the Analyze option lets you put together graphed statistics without your having to change the underlying data.

Say you're looking at a series of daily sales totals and want to quickly view a graph of average monthly sales totals. The Analyze option can calculate and graph the average values without requiring you to change your spreadsheet data. Instead of starting over with your data, pulling up the appropriate statistical or analytical functions, changing the data, and then graphing it anew, Quattro Pro lets you produce a graph of the information by simply selecting /Graph, Series, Analyze. If, after looking at the graphed averages, you want to place the associated data in your worksheet, you can do so with the convenient Table option. Among the simple statistical models that Quattro Pro's Analyze feature can help you produce on the fly are aggregates, moving averages, linear fits, and exponential fits.



Quattro Pro 4.0 lets you produce graphed statistics (such as Moving Averages) automatically without requiring you to alter your data.

Quattro Pro 4.0 has a nifty Zoom and Pan feature that lets you change the level of detail and perspective on a graph. This is especially useful for examining small portions of large graphs. With a double-click on the left or right mouse button, Quattro Pro will call up scrolling tools that let you isolate part of a graph series or pan (similar to scrolling) right and left to examine a graphed series in detail, one portion at a time. The Zoom and Pan feature adds another level of flexibility to Quattro Pro's graphics. There's even a new graph type in Quattro Pro 4.0: bubble graphs, which let you plot bubbles of relative sizes against x- and y-axes.

Efficiency Boosts

With the possible exception of *multimedia*, the term *usability* is the buzzword of choice these days. Borland is working to make usability a reality, having added many new timesaving features to Quattro Pro 4.0. The most notable are network support enhancements and printing enhancements.

Multitaskers will appreciate Quattro Pro 4.0's new support for background printing. A Print Manager window that pops up when you select /Print Manager reports on print-job sequences, assigns each queued job a temporary filename, and reports on readiness and activity for print jobs. If you use Novell NetWare Version 2.15c or later, you can now accomplish many network tasks without leaving Quattro Pro, including controlling NetWare connections, mapping drives, and checking print queues. For example, viewing currently mapped network drives is as simple as selecting /Options, Network, Drive mappings. If you've got multiple printers and file servers, the ability to specify and print to network print queues on the fly saves lots of time.

Users of SuperCalc and Lotus 1-2-3 will appreciate Quattro Pro's Audit menu, which graphically shows cell dependencies, circular references, and other information about cells linked by formulas.

Version 4.0 adds some nifty enhancements to everyday spreadsheet tasks: You can sort columns as well as rows, and you can add notes to named spreadsheet blocks. One useful feature lets you copy only the contents or format of a given block.

1-2-3 File Formats

1-2-3 continues to define compatibility standards—from macro compatibility to file format compatibility. Millions

of spreadsheet users demand 1-2-3 compatibility, and previous versions of Quattro Pro didn't support some of the crucial 1-2-3 links, particularly when it came to graphics.

That's changed dramatically with Quattro Pro 4.0. The software now supports all 1-2-3 Version 3.*x* formats, including Impress and Allways graphics formats, in addition to Version 2.*x* file formats. The program's support for the new formats is also fairly intelligent: For example, when retrieving a WK1, WK3, or WKS file that has a corresponding Impress FMT or FM3 file, Quattro Pro asks if you want to read the FMT or FM3 file and apply the Impress formatting to it. You'll also find that Quattro Pro supports Excel (including Version 3.0) and Harvard Graphics formats, as well as scalable Bitstream fonts.

Quattro Pro has always been a good tool for spreadsheet publishing, and it remains an alternative to presentation graphics programs, thanks to its full-featured slide-show builder.

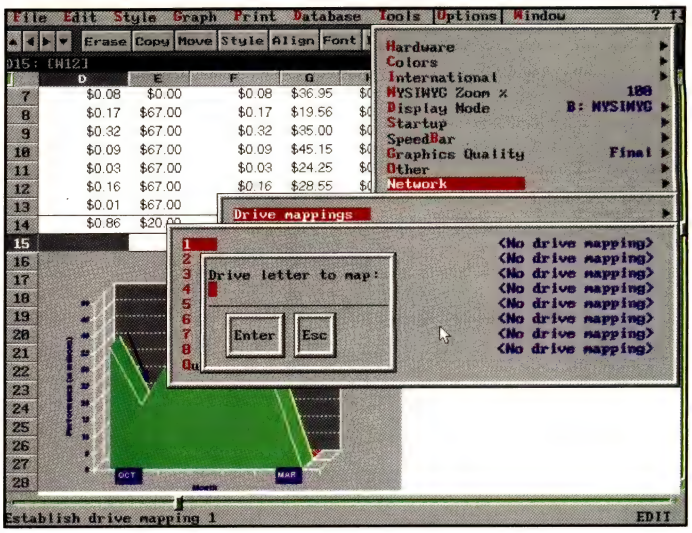
In Total

The spreadsheet category is enjoying a small renaissance, so if you're in the market for a new one you have many choices. Quattro Pro 4.0 is recommended for users of previous versions of the program, who can upgrade for $79.95. Meanwhile, users of competitive spreadsheets can make the leap to the new Quattro Pro for just $99.95.

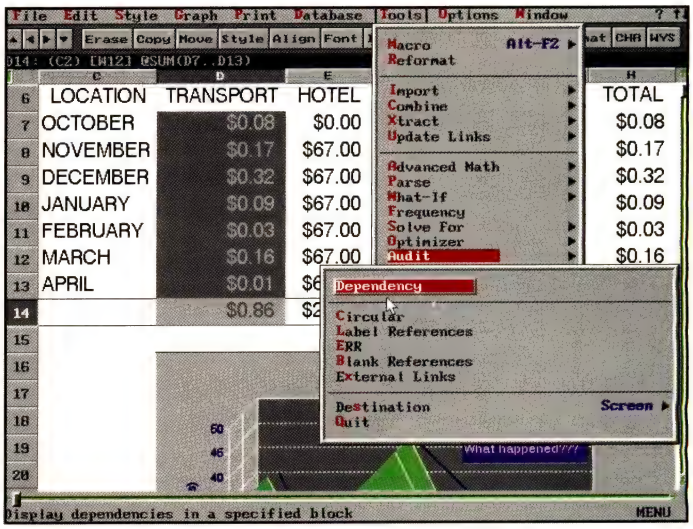
If you're making a first-time spreadsheet choice, Windows spreadsheets are also an option. Borland will soon be releasing Quattro Pro for Windows, which will have clear advantages over the DOS version. Included will be dialog-building features that will permit a great deal of customization, a menus-on-demand feature that will let you pull up context-sensitive menus throughout the program, an easy-to-use tab metaphor for linking and consolidating sheets, and a far more advanced customizable toolbar. Quattro Pro for Windows will also feature advanced query-by-example features and support for dynamic data exchange and object linking and embedding.

For those not headed toward a Windows spreadsheet, though, Quattro Pro 4.0 is worth its $495 price tag. One thing that shouldn't be forgotten when comparing 1-2-3 to Quattro Pro is that Borland, after acquiring Ashton-Tate, is now a powerful database player. More and more, spreadsheets are functioning as front ends for database data, and Borland's spreadsheet provides a smooth path to the world of databases. You can directly access Paradox, dBASE, and ASCII files from within Quattro Pro, and it's easy to write data back out to those programs. 1-2-3's release of the 3.*x* series uses the Datalens requester to access database information, which adds an extra step.

1-2-3 users will continue to enjoy some advantages over Quattro Pro 4.0 users. For one thing, Lotus's file formats are universally compatible. It's hard to find any



Without leaving Quattro Pro, NetWare users can perform many network functions, such as mapping drives and controlling connections.



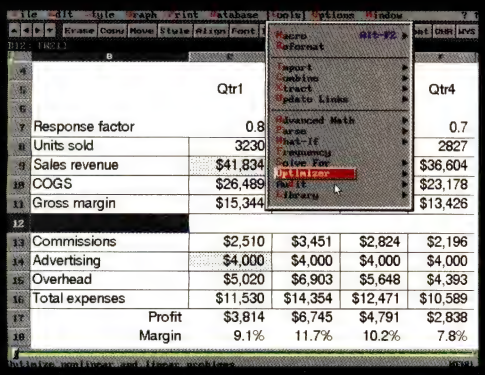
You can audit cell dependencies in Quattro Pro 4.0, which is a great help in finding and preventing errors within worksheets.

number-crunching software that doesn't support 1-2-3 file formats. Additionally, there's an entire world of 1-2-3 spreadsheet add-ins out there, most of which don't work with Quattro Pro. If you want to customize your spreadsheets with add-ins, you're in better shape with 1-2-3. (The new Quattro Pro does let you load and unload custom @ functions.)

Quattro Pro 4.0's new features are worth having. The SpeedBar alone is worth the price of admission, and extras like the TurboSum button, the graph-analysis features, and background printing add up to a lot more efficiency. You'll find that this graphical, well-thought-out product saves you keystrokes as well as frustration. Quattro Pro 4.0 is nearly impossible to pass up.

Quattro Pro 4.0, $495 ■ Borland Int'l ■ P.O. Box 660001, Scotts Valley, CA 95067 ■ (800) 331-0877, (408) 438-8400

1



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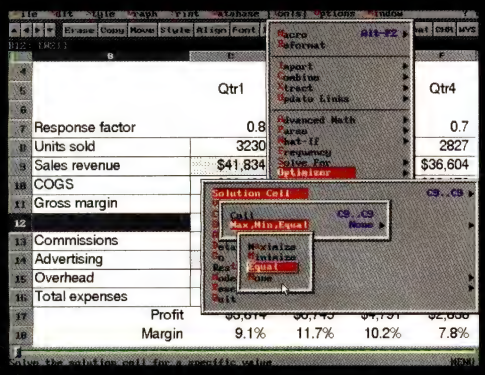

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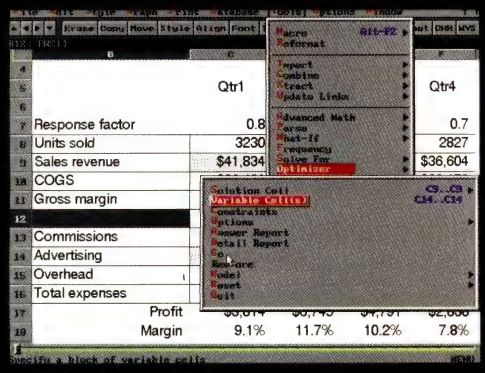

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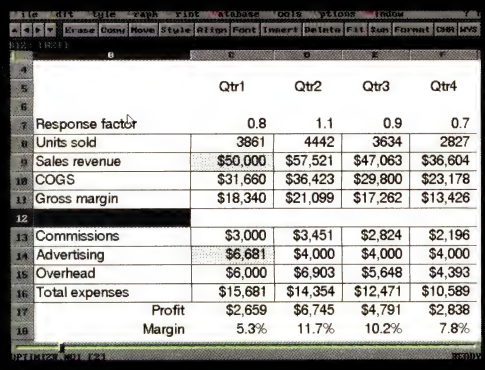


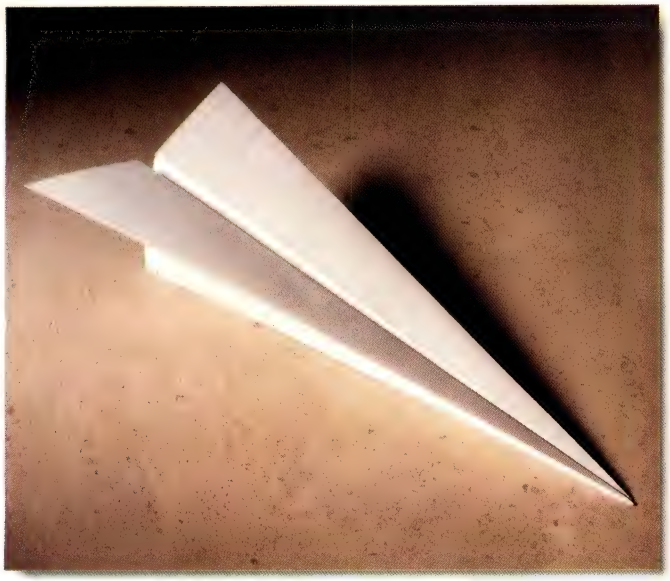
"What-if" analysis isn't new to spreadsheets, but spreadsheets that include Solver capabilities, such as Lotus 1-2-3 Version 3.1 or later, 1-2-3 for Windows, and Microsoft Excel, have taken these capabilities to new heights. They've done so by allowing users to define and solve complex nonlinear problems that may depend on multiple variables and multiple constraints—goal seeking at its most sophisticated. Quattro Pro 4.0 is competitive in this area via a new Optimizer selection available on the Tools menu. If you're unfamiliar with this sort of what-if analysis, take a look at the accompanying screens of a sales forecast.

1. Let's say you looked at this screen and wanted to see how much you would have to spend on advertising (the amount in cell C14) to raise Qtr1 Sales revenue (the amount in cell C9) from $41,834 to $50,000 based on a .8 response factor and taking into account that the units' sold value depends on both the response factor and the advertising value.

2. To solve for the $50,000 sales revenue value, you would select Optimizer from the Tools menu, specify C9 as the Solution cell, specify the target value of $50,000 for the Solution cell, and specify the Variable cell for Qtr1 advertising as C14.

3. Once you have specified the Solution and Variable cells, choose Go to solve for the target $50,000 value.

4. As you can see from the final screen, the value for Qtr1 advertising rises to $6,681 in order to make the value in cell C9 (Qtr1 sales revenue) equal to $50,000. Quattro Pro 4.0 can do this kind of analysis using multiple variable cells and multiple constraints. Such modeling is very useful in optimizing budgets, forecasts, and other sheets, and it's a welcome addition to Quattro Pro 4.0.



Now there are two ways to make an 11″x 17″ sheet of paper fly.

The new LZR 1560 from Dataproducts is a complete departure from ordinary laser printers. At 15 ppm it's not only faster than most laser printers, it can also deliver output up to 11″ x 17″. Which means it can print spreadsheets, illustrations—any two-page layout—in the time it normally takes to process a letter-size page.

This kind of performance is the result of combining two powerful innovations. Namely, a RISC-based controller, for quicker rendering of fonts and graphics, and PostScript® Level 2, an advanced printing language that delivers PostScript's vast graphic capabilities faster than ever before.

Plus, while most laser printers give you only "enhanced" 300 dpi, ours gives you *true* 400 dpi. So you get outrageously crisp and clean text and graphics. And switching back to 300 dpi can be done with a click of the mouse.

Imagine creating two-page desktop publishing layouts without cutting and pasting. Or finally getting your full production timeline on a single page that has *legible* 6-point type.

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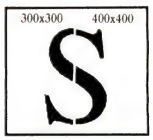
11″ x 17″ Laser Printer Market Snapshot

SPECIFICATIONS

Manufacturer/Model	Resolution (DPI)	Speed (PPM)/Processor		Page Description Language	List Price
Dataproducts LZR 1560	**300x300 OR 400x400**	**15**	**Weitek 8200 RISC**	**Adobe PostScript Level 2 & PCL4**	**$5,695**
QMS PS2210	300x300	20	Motorola 68020	Adobe PostScript	$9,995
LaserMaster 400XL	400x400	20	None	Microsoft TrueImage	$9,995
Varityper VT600W	600x600	7	Motorola 68020	Adobe PostScript	$16,995
DEC PrintServer 20	300x300	20	N/A	Adobe PostScript	$25,247
ATI LC6020	300x300	20	Motorola 68020	ATI LaserDrive & PostScript	$15,995



400 dpi offers greater halftone range and sharper images than standard 300 dpi.

Dataproducts.

The high performance printer people.™

Price breakthrough!
- 400 DPI
- Adobe PostScript Level 2
- 11″ x 17″ format
- $5695!!

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The KX-P2123, a 24-pin with ATM and color option.*

The KX-P2180, a 9-pin with color option. ATM not available.*

The KX-P2624, a 24-pin with ATM. Color option not available.*

Circle 135 on reader service card.

PQ9-PCC

Extend Your Laptop's Battery Life

THE PLANE IS AT 20,000 FEET AND CLIMBING. YOU'VE GOT SIX HOURS TO WRITE A REPORT ON NEXT YEAR'S BUDGET. IT'S DUE ON YOUR BOSS'S DESK RIGHT AFTER YOU LAND, BUT IT'S GOING TO BE LATE—BECAUSE YOUR NOTEBOOK'S BATTERY JUST DIED.

IT'S A LAPTOP USER'S nightmare. But a few precautions can almost guarantee that this will never happen to you.

Reliable battery operation and more computer time from each battery charge are two benefits you'll gain by paying attention to power conservation and battery care. Not all laptops and applications use power in the same way, and not all batteries are alike. But following these common-sense steps will ensure longer, more reliable battery life for your laptop PC.

BY J. SCOT FINNIE

1 Assess your NEEDS

2 Know your computer

3 Devise a Strategy

4 Lower screen brightness

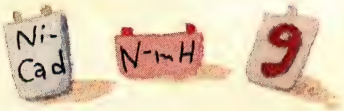
5 Don't shut down the hard drive too often

6 Set up a disk cache or RAM disk

7 Slow down your CPU

8 Be prepared for low-power situations

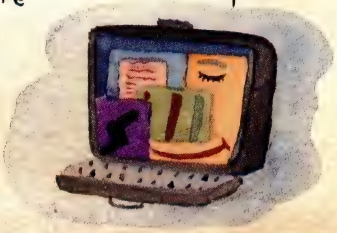
9 UNDERSTAND your battery!



10 Measure your battery's charge life

11 Always carry a fully charged spare battery

12 CONSERVE windows power



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ILLUSTRATIONS BY JESSIE HARTLAND

1.

ASSESS YOUR BATTERY-OPERATED COMPUTING NEEDS.

It won't extend battery life directly, but gauging how you work on battery power is a crucial first step. What applications do you use when you travel? Which of the three principal computer subsystems—display, hard drive, and CPU—do your applications use the most? How much time do you spend working on battery power: Are you commuting an hour each way by train, or do you fly coast to coast or overseas regularly? The answers to these questions will help form your power-conservation strategy.

2.

KNOW YOUR COMPUTER.

Read your laptop manual thoroughly. Make sure you're fully versed in the features, limitations, and procedures of your model. How long can you expect a battery charge to last? How long does it take to charge your laptop's battery? Should the battery be fully discharged before you recharge? What do the power-management settings mean, and how should you use them?

Generally, there are two types of power conservation for the display, hard drive, and CPU. The most common type is the *subsystem shutdown,* which monitors the frequency of the user's interaction with the keyboard and the mouse. You set the intervals of inactivity after which each subsystem will shut down. If you stop typing a memo onscreen to read a hard-copy report, for example, the power to your screen shuts down after the specified interval. Press any key to recall the display where you left off.

The other power-conservation option lets you vary the default settings for the CPU clock rate and the display brightness. (Not all laptop manufacturers offer these features.) If you're word processing, do you need the full clock speed of a 25MHz CPU, or is 10MHz sufficient? Selecting a slower processing speed saves battery power. The same is true of displays. Some laptops provide display settings that let you decrease the power available for screen brightness. A program that presents a character-based screen might not need as much display power as Windows.

3.

DEVISE A POWER-CONSERVATION STRATEGY.

Begin by recognizing the laptop subsystems that use the most power. Backlit displays are the largest drain on the batteries, hard drives the second largest, and CPUs the third. Other power drains are the internal modem, the floppy drive (when in operation), the math coprocessor, RAM, core logic, the small speaker, and the ports. To conserve power, shut down any subsystems you don't need. If you rarely use your internal modem, don't turn it on unless you're about to go online.

Once you've determined which of the remaining subsystems your applications lean on the most, you'll be ready to make decisions about where and how to conserve power. Following are options to consider.

4.

LOWER SCREEN BRIGHTNESS.

You can extend battery-charge life dramatically by lowering screen brightness. Reduce brightness when you're using the PC and shut off the display when you're not. Choose the lowest brightness setting you're comfortable with. Some applications need high brightness for graphical elements while others look fine at lower levels.

Another way to reduce display power consumption is to reverse the video colors. Most Windows users prefer to have graphical elements appear as dark images on a light background. But this consumes more power than having light-colored characters on a dark background, which is a readable setup for many DOS applications.

5.

DON'T SET THE HARD DRIVE TO SHUT DOWN TOO QUICKLY.

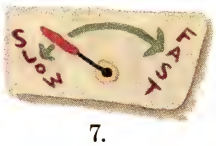
If your laptop lets you set the hard drive shutdown interval, keep in mind that frequent starts and stops aren't a good idea. When you access your drive too frequently, the power drain from spooling up the drive outweighs any power savings you gain from shutting it off. On the other hand, you'll see power savings from drive shutdowns if you use the hard drive only occasionally. The proper shutdown interval is tough to gauge. Phoenix is considering the development of a TSR program that would measure the frequency and duration of drive accesses to help you determine the optimal shutdown interval.

Frequent hard disk starts and stops also decrease motor life, according to drive manufacturers. Their estimates of reductions in the mean time between failures that result from aggressive power management range from 30 to 80 percent.

6.

SET UP A DISK CACHE, A RAM DISK, OR BOTH.

Disk caches and RAM disks save you battery power by limiting the number of drive accesses your PC makes. It's preferable to use a disk caching program that can cache disk writes as well as reads, such as Hyperdisk or the version of SMARTDRV.SYS included with Windows 3.1. If you have sufficient RAM to set aside a portion to be used like a hard drive, use a RAM disk to reduce drive access and save battery power. In DOS 5.0, this is simply a matter of inserting the phrase DEVICE=RAMDRIVE.SYS in your CONFIG.SYS file; see the DOS manual for details on RAMDRIVE.SYS switches. If you don't have enough RAM to make an effective RAM disk, consider adding memory to your system so you will have enough.



7.

SLOW DOWN YOUR CPU.

Slow down your notebook's CPU if your word processor works satisfactorily at a lower speed. Many notebooks have keyboard commands for CPU speeds, so you can switch them easily. Judicious use of CPU slowdown features markedly improves power management for all but CPU-intensive applications such as spreadsheet recalcs.

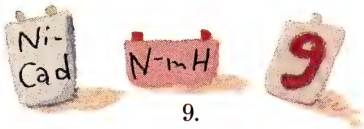
8.

BE PREPARED FOR LOW-POWER SITUATIONS.

What should you do when the lights start flashing and the warnings start beeping? A low-power light does not necessarily mean that power will go out in seconds or even minutes. Read the notebook's documentation to verify what flashing lights and system beeps signify. Many notebooks let you set the interval between warnings and shutdown.

The next time you continue to work after the low-power lights start flashing, keep track of the time between the first flash and the computer shutdown. Since applications and individual usage vary, gauge this yourself rather than relying on what the manual says. Next time the battery level on your notebook becomes critical, you'll have a good idea of how much time you have left.

When time is running out, save your work. Saving uses power, but the interval before shutdown could be smaller than you think. Next, reduce display brightness if possible. Even if you don't usually do this, consider doing so when power is low. Then lower your CPU speed.



9.

UNDERSTAND YOUR BATTERY'S PERFORMANCE CHARACTERISTICS.

There are three types of batteries popular in notebook computers: nickel-cadmium (NiCad), nickel–metal hydride (N-mH), and standard disposable alkaline batteries (flashlight batteries). NiCad batteries are the most

ENVIRONMENTAL CONCERNS

Nickel-cadmium batteries are well established, but environmental concerns about the effects of their disposal might hasten the availability of nickel–metal hydride batteries and other battery chemistries. Experts believe that NiCad batteries disposed of in landfills are breaking down and leaching cadmium, which is a toxic metal, into groundwater.

Minnesota recently implemented legislation to address this problem. It forces battery manufacturers and manufacturers of products that use NiCad batteries to make them easily removable from products so that they can be discarded separately. Minnesota has also mandated collection programs for NiCad batteries. Other states are expected to follow suit. California, Connecticut, Florida, Illinois, Michigan, New Jersey, New York, Oregon, Rhode Island, and Vermont are considering or have passed legislation that make NiCads easier to remove and dispose of.

Some battery manufacturers (including Compaq, Tandy, Toshiba, and Sharp) and their customers have formed a consortium called the Portable Rechargeable Battery Association (PRBA), whose goal is to slow down the pace of change in battery regulation so that manufacturers can keep up with legislative demands. The PRBA was also formed to help users find ways to dispose of NiCads properly. If you have NiCad batteries to discard, contact the manufacturer of your product. Some companies, such as Dell Computer, have already offered to collect NiCad batteries from customers at no charge. And Compaq Computer has started a recycling program for its NiCad battery packs. For more information on how to dispose of NiCads, contact the PRBA at (404) 980-6688.

popular. N-mH batteries will probably begin to play a much bigger role, however. Disposable alkaline batteries are available in only a handful of notebooks.

NiCad batteries are susceptible to the *memory effect*—they might not recharge fully if they're not first completely discharged. Some laptop makers say this is less of a problem than it once was. Still, full discharging is a good idea. For maximum charge life, new NiCad batteries must be *conditioned*, fully discharged and charged four or five times.

Like NiCad batteries, N-mH batteries usually need to be charged and used several times before their charge life is maximized. Unlike NiCads, N-mH batteries have no memory effect, so you needn't discharge them fully before recharging. They also offer more power per square inch. On the downside, they're heavier than NiCads, they aren't capable of as many charge/discharge cycles, and they don't endure cold and heat as well.

10.

MARK YOUR BATTERY AND MEASURE ITS CHARGE LIFE.

If your laptop PC uses more than one battery, stick a small square of masking tape on the end of the battery that's visible when you open the compartment door. Mark the tape. This will differentiate the batteries, so you'll be less apt to confuse one that's been charged with one that hasn't.

Frequent travelers will find that their NiCad batteries begin to give out after a couple of years. Since the sign of battery wear is decreasing charge life, use Traveling Software's Battery Watch to measure your battery's charge life when it's new (disable all power-management functions). Mark that time on the masking tape. Then, if you suspect serious wear, run the test again and compare the results. Replace your battery pack (or recycle it—see "Environmental Concerns," page 177) when it consistently falls short of 75 percent of its original capacity.

11.

ALWAYS CARRY A FULLY CHARGED SPARE BATTERY.

Allay your fears about unexpected battery power failures. Buy a spare battery and carry it with you on the road. Many portable-PC buyers are reluctant to carry extra weight after they've paid for a high-tech, low-weight notebook, but the peace of mind the spare battery gives is well worth the extra fraction of a pound. Plus, you'll double your available work time.

Of course, if your batteries aren't charged properly, having an extra won't help much. People often make mistakes setting up the computer and the battery for charging. Check that the battery door is closed. Make sure the AC power cord is plugged in at both ends. Turn the computer off. Follow the manufacturer's instructions, but for maximum work time, charge your batteries for longer than the recommended quick-charge time—overnight if possible.

When a discharged battery recharges (that is, when the charge light goes out) in less time than usual, it's a sign that the battery probably isn't fully charged. To recondition your battery, discharge it fully and recharge it overnight, repeating the process once or twice.

Some notebook computers can "trickle-charge" their batteries while running on AC power; others can't. Don't assume you're charging your battery in this way. Sometimes fully charged batteries actually discharge slightly when you're running on AC power.

12.

CONSERVE WINDOWS POWER.

Power management under Windows on a 286, 386SX, or 386DX laptop PC is a hit-or-miss operation. BIOS-based power-management features don't work reliably under any operating system or environment other than DOS. The problems you might encounter include time-outs of various subsystems, loss of standby or sleep operations, and disruption of the Windows clock. Short of an environment-specific implementation, such as Texas Instrument's TravelMate 3000 WinSX, there's no ready solution.

Most of these problems occur in 386 Enhanced mode. The newer 386SL computers (and many AMD 386SXL implementations) have been designed with Windows power management in mind. But for most 386SXs, power-management features aren't that effective under Windows. Disk drive shutdowns are effective, but since Windows is a frequent disk drive user, you should decrease your need for disk access under Windows.

Your best option is to set up a RAM disk using the DOS RAM disk utility (called RAMDRIVE.SYS in DOS 5.0) and a disk cache. You'll need sufficient RAM to run Windows (probably 3MB) and to create a significant RAM disk (probably 2MB). The more RAM you have, the better; providing more RAM to your Windows applications cuts down on their need to save to disk.

Once you've set up the RAM disk, select a brief interval for the hard drive shutdown. Then direct Windows' temp files (in the AUTOEXEC.BAT file) and those of any other applications you'll be using to the RAM disk. ◪

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SAY YOU'RE WRITING a proposal to be sent to ten prospects, and you want to include a quarterly sales update along with a graph. So you load the spreadsheet, copy the data to an ASCII file, and save the graph as a PIC or EPS file. Next, you load the database, search for and extract the names you want, and save them as another ASCII file. Then you load the word processor again, import the spreadsheet data into a table in your letter, and import and place the graph. Finally, you import the addresses into a separate word processing document, format them for mail merge, and print the letters. (Don't even think about printing envelopes or labels.) That's a lot of steps for a relatively straightforward task.

By Jan Smith

EVEN IN THE PRE-WINDOWS WORLD, there was a simpler solution: You could use an integrated package that combined word processing, spreadsheet, database, and perhaps communications features in one program. With all the data in one place, it was faster and easier to put it together the way you needed it. Another benefit was cost savings—even the most expensive integrated package was cheaper than an equivalent collection of standalone programs, and low-end products could be found for under $150. The drawback was that while those packages succeeded in providing integration, the modules themselves were often weak, lacking many features available in standalone programs. And as standalone programs improved their ability to exchange data, it seemed that integrated software might go the way of the eight-track tape.

Standalone programs have also become increasingly complex over time, adding specialized features—from equation editors to complex macro program languages—that some users find overwhelming or useless. However, many vendors believe there's still a need for programs with acceptable features and easy data integration that won't break the budget. Within the last year, a number of integrated applications have been introduced, and older programs have been upgraded.

We took a look at low-end integrated packages to find out how useful they are in everyday business applications. To test integration, we imported graphics, a chart, and table data into a word processing document and performed a mail merge using names in a database. We also evaluated the individual mod-

PHOTOGRAPH BY PIERRE-YVES GOAVEC

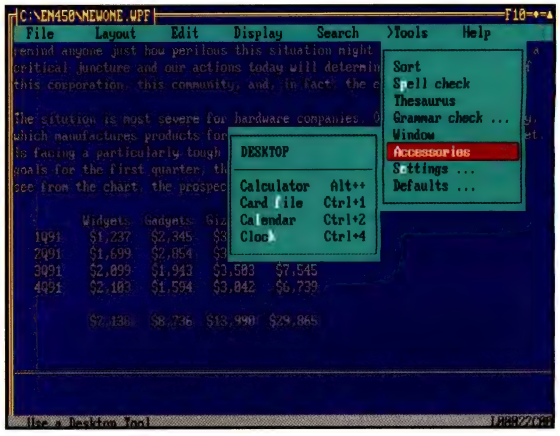
ules, looking at such common requirements as text formatting, mathematical functions in the spreadsheet, and search and query features in the database. For price and performance comparison, we tried the same set of tasks using standalone programs. In DOS we combined WordPerfect 5.1, Lotus 1-2-3 3.1, and dBASE IV. For Windows, we used Word for Windows 2.0, Microsoft Excel 3.0, and Superbase 4 1.3.

HOW THEY WORK

All the integrated applications we reviewed provide a central core or window for managing the modules. In most cases, you can open at least one file in each module, keep all the files open, and switch between the documents using a hotkey or menu option. Some programs let you open more than one word processing or spreadsheet file simultaneously; some let you open only one of each kind at a time. Moving data between modules is generally a simple matter of copying text, data, or a graphic to a clipboard, then pasting it into another document. Some programs allow *live* links, meaning that if you change the data in the spreadsheet, for example, your graph will change in the word processor. Several packages include an auto-dialer, which tells your modem to dial a number highlighted in a database or word processor.

Integration between the word processor and the database is equally efficient. Normally you specify a link between your document and a database, through either the print menu or a separate mail-merge module. When it's time to insert the database field into the letter, most programs pop up a list of fields from the specified database, and you just point and click (or scroll and press Enter) to place the field in the right place. Several programs let you search the database to select only the records that you want to merge. To print labels or envelopes, repeat the process with a document formatted properly for label or envelope printing. Some integrated programs include separate modules for printing labels or envelopes.

With the standalone programs, by contrast, operations are much more complex. Our DOS example required saving Lotus 1-2-3 table data as an ASCII file and the graph as a CGM file and exporting dBASE records as a comma-delimited text file. In WordPerfect, we ran the external conversion utility to convert the CGM file and a PCX logo to the required WPG format. Within WordPerfect, we imported the table data, though without its formatting. We inserted the logo and graph as graphics, first sizing and placing them by specifying page and graph measurements. Next we imported the database file to another WordPerfect document, and then formatted the data to be a secondary-merge file. All these tasks took much longer than with any of the integrated packages. Even using Windows programs, these operations were surprisingly complex, though not as complicated as under DOS. Importing a



You can bring up Enable Works' Desktop Accessories menu in any module with just a couple of keystrokes.

graphics file into Word for Windows 2.0 and sizing it is easy, as is linking graphs and charts from Excel to the word processor. Mail merge was tougher, since there's no link between Superbase 4 and Word for Windows. We had to export the database as an ASCII file, import it into Word, format the data as a table (a simple command in WinWord 2.0), and attach the data file to the letter document (through the Print Merge command).

Granted, you make sacrifices in exchange for speed and simplicity. In most cases, the integrated packages lack some features that are standard in the standalone programs. Only one, PFS:WindowWorks, lets you create a table of contents or index in the word processor, for example, and you may miss some mathematical or financial functions in the spreadsheet module or report-writing features in the database. But if the feature set is sufficient for your needs, integrated software is a compelling solution. The combined cost of the DOS programs above is $1,885 (list price), while the Windows applications list for $1,685. All the programs reviewed here cost less than $300.

Enable Works 4.5

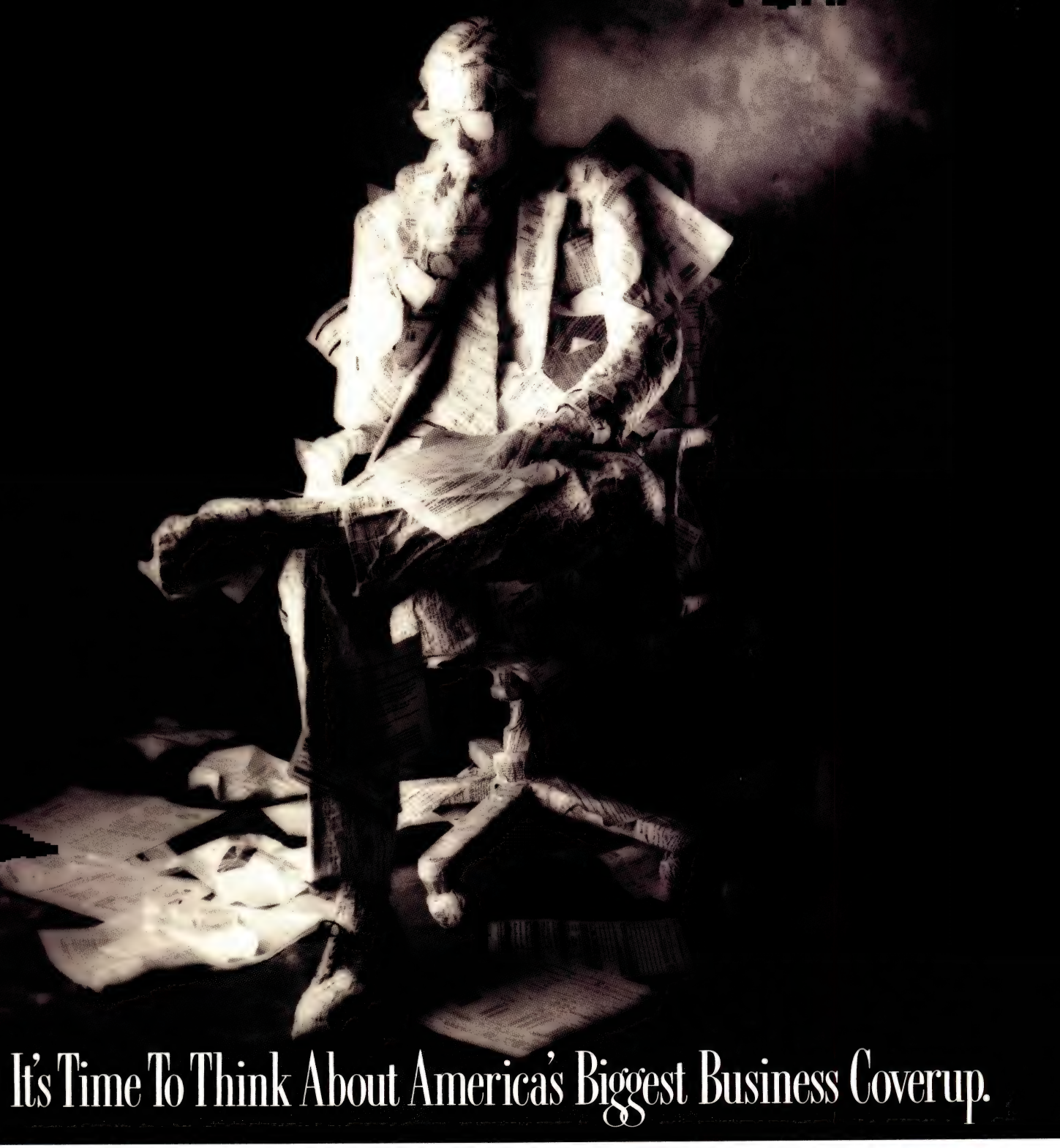
$149; Enable Software, 313 Ushers Rd., Ballston Lake, NY 12019; (800) 888-0684

Pros: Relational database; flexible; well-designed spreadsheet charting

Cons: Awkward interface; weak word processor

Enable Works 4.5 is the low-end version of Enable 4.5 (upgrades of Enable OA and Enable BP, respectively). The high-end product should be shipping by the time you read this, with Works coming shortly after. We reviewed a prerelease copy of Works.

Enable offers users a full set of features in a somewhat awkward package. The program opens with a Master Control Module from which you choose the type of function you want (word processing, spreadsheet, database, communications, or mail merge). Once you're in one document, you have to press F10 (or click F10 in



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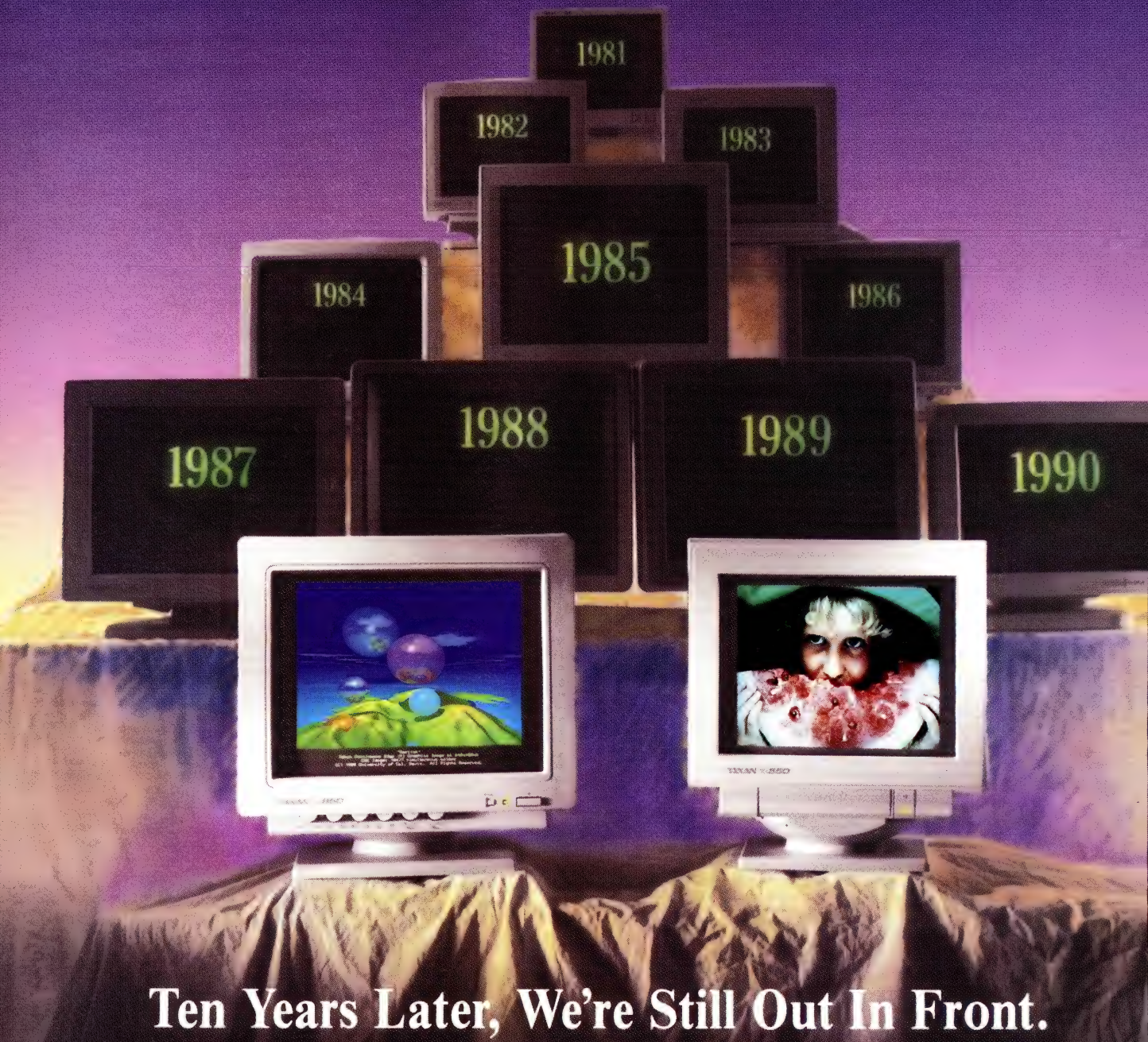

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the corner of the screen), Tools, Window, Open to get back to the Master Control Module to choose another document. You can open up to eight files at a time, in any combination of modules. Once they're open, switching between documents (called *windows*) is easy. Press Alt–up arrow for a list of open documents, then scroll through the list and press Enter to choose the one you want. Or size and move the windows to see all of them, then just click on a corner of the one you want. Whichever type of document is on top dictates the menu options at the top of the screen.

Abundant hotkey combinations let you issue commands easily, but it's hard to figure out what they are unless you check the documentation. To get context-sensitive online help, press F1, but to get out of help, press Alt-End. Although the program supports a mouse, it's easier to use the keyboard for most tasks.

Copying data is simple enough: Press Alt-F5 to copy data from one document, then press Alt-F5 again to paste it. The program doesn't automatically create live links between modules, but it does ask if you want to update data, letting you establish a *warm link* between the word processor and the spreadsheet and graphics modules. (We weren't able to test this, however, because the links weren't working in the prerelease version.) Once you've got a table from the spreadsheet into a word processing document, you can format or change the data.

Mail merge is a separate menu option in the Master Control Module. However, we couldn't test it because the mail-merge link function was not working in the version we used.

WORD PROCESSING. Enable Works' word processor is fairly primitive—for example, you have to press F3 to insert a blank line in an existing paragraph (pressing Enter won't do it), and font support is limited to what's in your printer. However, it does boast some sophisticated features, allowing you to import PCX files (with color, or dithered to black and white) and size them in the graphics module before placing them in the word processor. To mark places in a document, you can insert "paper clips" (these are similar to what other programs call bookmarks, but they're numbered, not named). There's also a page-preview feature, but you can't edit in that mode. Grammatik IV 2.0 is available as an add-in for $99.

DATABASE. Enable Works has the only relational database among the packages reviewed here. You can also design your own reports, establish data-validation checks, and write your own error message if the data entered doesn't meet the specifications.

SPREADSHEET. The spreadsheet module is also strong, with thirteen graph types and lots of formatting options. The chart menu lets you set all the options for a chart, from data ranges to colors and legends, on one set of two screens—which is an easier operation than in many other programs. Enable includes a menu to transpose rows and columns if you decide you've arranged your spreadsheet poorly. The program also boasts three-dimensional spreadsheets.

OTHER. Enable Works includes a communications module, a pop-up calculator, a card file, a calendar, a clock, and a telephone book, and you can buy add-in dictionaries in about a dozen foreign languages. The program also supports e-mail through Enable's Higgins program, a LAN-based e-mail and groupware program available separately.

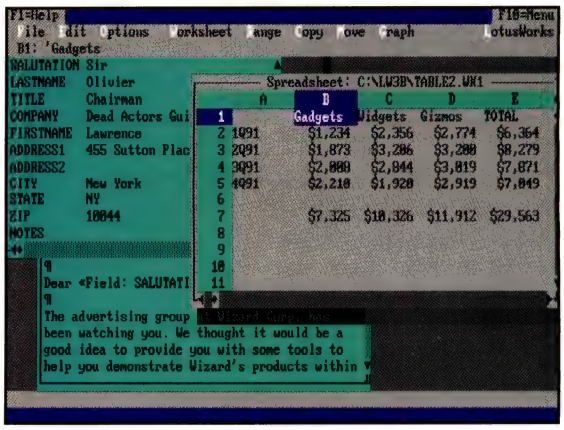
LotusWorks 3.0

$149; Lotus Development Corp., 55 Cambridge Pkwy., Cambridge, MA 02142; (617) 577-8500
Pros: File viewer; live links between modules; scalable fonts; strong database
Cons: Inconsistent menus among modules; no graphics file import

LotusWorks 3.0 is the first upgrade of AlphaWorks to appear since Lotus bought the program from Alpha Software in June 1990. We reviewed a prerelease version of the program, which Lotus should be shipping by the time you read this.

LotusWorks' main screen lists the four modules (word processing, spreadsheet, database, and communications) and the open files under each. You can open up to nine files, in any combination, at one time. However, to open a new document, you have to go back to the main screen by choosing the LotusWorks menu from the upper-right corner of the screen. Once documents are open, however, you can size and move the windows, then click on the one you want. LotusWorks includes a file viewer that lets you see the first few lines of the document you've selected before you go ahead and open it.

Accessing menus in LotusWorks is confusing and inconsistent among modules, in part because Lotus decided to adhere to the conventions of its other pro-



In LotusWorks, you can have multiple documents open simultaneously in resizable and movable windows.

grams. For example, to get to the file menu in the word processor, you have to press F10, then F. In the spreadsheet, it's /F. Although the first letter of each menu choice is highlighted, you can't get to the menus by pressing the Alt key and the letter, as you can in many other programs.

Importing charts and graphs from a spreadsheet into a word processor is easy. Just point and click to choose, first from a list of spreadsheet filenames, then from a list of range names in the file you've chosen. Graphs and charts can be sized when they're imported—you tell the program the height you want the graph to be, and it sizes the graph, maintaining the aspect ratio. The word processor splits the table horizontally if it falls on a page break, a rather annoying problem you won't discover unless you check print preview. However, the linked data is live—a change in the spreadsheet will be reflected in the imported graph.

Merging a database into a word processing document is straightforward. As with other programs, you link the database through a special menu, scrolling first through the available databases, then through the available fields to choose the ones you want.

WORD PROCESSING. The program supports a wide selection of font and spacing choices and lets you insert special features such as date, time, page, table and figure numbers, and nonbreaking spaces. A code at the bottom of the screen tells you which font you're using at the cursor point. Page preview lets you see the final product, but you can't zoom or edit in that mode. The program includes Swiss (equivalent to Helvetica), Dutch (equivalent to Times Roman), and Courier fonts from Bitstream, scalable from 4 to 127 points. Unfortunately, you can't bring external graphic files, such as PCX or TIFF, into the program.

DATABASE. LotusWorks' database is almost relational—you can look up a value in a one-way link to another database, but you can't create a two-way link. It allows you to set up rules for entries, including computations based on formulas, and calculate an incremental increase to number records automatically. The database also includes a rich set of search criteria as well as an "expression builder" to help you write your search criteria in the correct syntax. And you can easily extract a subset of a database, based on search criteria, to be made into a new database.

SPREADSHEET. The spreadsheet module is also strong, allowing you to protect and unprotect cells, copy from a single cell to a range, and convert formulas to values. You can split one spreadsheet into two windows, either horizontally or vertically.

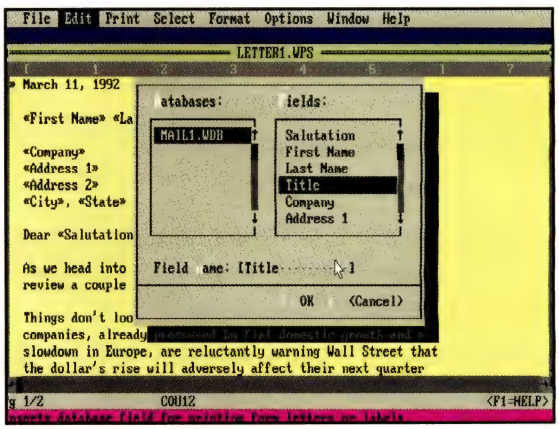
OTHER. The communications module creates a history file (to record the entire session), records and uses scripts, and lets you capture incoming text to a file. Creating a dialing directory, however, is more complicated than with the other programs—you have to save modem settings (such as baud rates and parity settings) for MCI, say, through the File menu as MCI (with LotusWorks' .CMS extension), then change the settings and numbers for CompuServe and save that under a different name.

Microsoft Works for DOS 2.0

$149; Microsoft Corp., One Microsoft Way, Redmond, WA 98052-6399; (206) 882-8080
Pros: Windows can be sized to view multiple documents; point-and-click mail merge; easy integration
Cons: No live links; no text-file conversion utility included

Although it hasn't been updated since 1989 and lacks some features found in newer programs, Microsoft Works for DOS is still a solid program. The opening screen includes a File command for creating a new file or opening an existing one. File Open brings a list of all documents, sorted by type. You can open a second document of any kind from wherever you are. Like its Windows counterpart, Works for DOS lets you choose which file to view from a list of open files in a Window menu (other programs make you go back to a central menu). You can size and move windows or split a window to view two parts of a document at the same time.

As with some other programs, linking data from the spreadsheet or database requires that you have all the necessary files open at once. Data brought into the word processor from the spreadsheet isn't live, but charts are. You can't size the chart with a mouse, but you can change its measurements from a dialog box. You can insert the data from a spreadsheet table, although not the boxes outlining the cells—and adding those boxes to reproduce the look of the table is nearly impossible. On the plus side, mail merge with a database files is easy—just open the letter and the database, then link the two through a menu command. When Works brings up the list of fields, point and click



With Microsoft Works for DOS, you insert fields from a database into a document from a pull-down menu.

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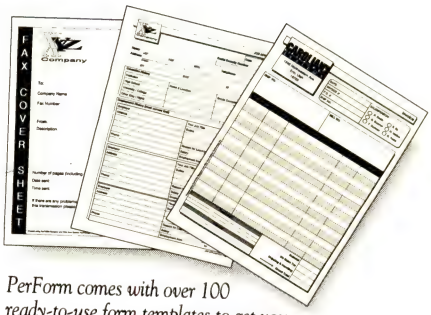

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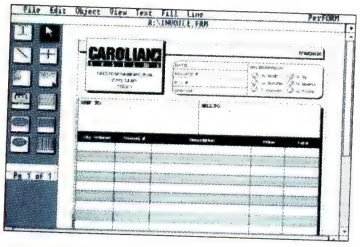

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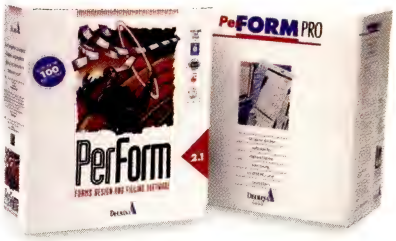

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to choose the one you want to insert in the document.

Until July, both Works for DOS and Works for Windows will be shipping with bundled software for America Online, an online videotext service.

WORD PROCESSING. The program includes a bookmark feature for marking places in long documents. To print envelopes or labels, set up a mail merge with a document formatted to print envelopes or labels. Works automatically closes up blank lines when printing merged letters. One weakness is that Works imports only ASCII or RTF files into the word processor—for other types of files, you'll need a separate conversion program available for $5 from Microsoft. (If you send $5 each for additional printer and video drivers, you get the file-conversion utility free.) Fonts are limited to whatever is available in your printer.

DATABASE. Setting up a database is easy—just type the name of the field followed by a colon. Works lets you save a database as a template for repeated use or fill it with records. You can query by example, conduct Boolean searches, design reports, and perform simple calculations—including sum, average, variance, and standard deviation—on the fields.

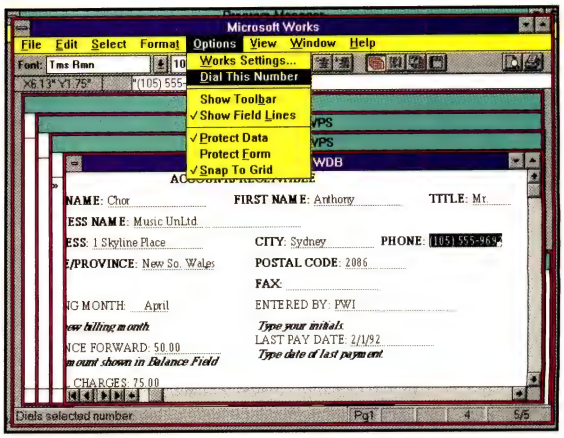
SPREADSHEET. The spreadsheet is adequate, with a healthy set of functions and a limited number of graphics. You can protect data, freeze titles, and show formulas instead of values. The graphing feature has special chart fonts (better than those available in the word processor) for labels and titles.

OTHER. The communications module is simple—you can capture text, and record and play back scripts. The program includes an alarm clock and a calculator; there's also a file-management utility for maintaining files or formatting disks from within the program.

Microsoft Works for Windows 2.0

$199; Microsoft Corp., One Microsoft Way, Redmond, WA 98052-6399; (206) 882-8080
Pros: Live links; button bars; easy-to-design database
Cons: Can't size graphics with the mouse

Microsoft Works for Windows resembles its Windows cousins WinWord and Excel much more than it does Microsoft Works for DOS. It's easy to use, with buttons for common functions. The program opens with an array of icons for the three standalone modules (word processing, spreadsheet, database) and for WorksWizards, or you can open an existing document. The program's draw and graph modules are accessible from the word processor and spreadsheet, respectively. WorksWizards is a set of elaborate macros that leads you through the creation of a database (in the form of an address book), for example, then shows you how to print form letters or mailing labels using that database. Though many of the commands go by too quickly for you to learn specifics, WorksWizards helps you become



Microsoft Works for Windows' auto-dialer lets you dial any highlighted phone number with a couple of keystrokes.

familiar with the program. At the same time, you create something useful.

Works for Windows doesn't require that you return to the opening screen to open your second file, as some other programs do. Just choose Open from the File menu to get a list of Works documents. The list isn't sorted, however—it's up to you to identify the documents from their file extensions. Use the Window menu to switch between open files, layers, tiles, and split windows.

As with most integrated programs, you need to have all files open to paste from a spreadsheet to a letter or to run a mail merge. You can add an object (a table or chart, for example) by linking, which leaves the data live and subject to change in the original file, or by copying, in which case the data won't change. If you want to insert a drawing into a word processing document, the program opens its Draw program to import files in a number of graphics formats. After bringing the file into Draw, you save it to the clipboard, then paste it into your document. It's impossible to size the imported object with the mouse, but you can change its measurements or scale it by a percentage of the original from a dialog box.

WORD PROCESSING. The word processor includes a button bar for formatting text, printing documents, and choosing options such as the spell-checker or thesaurus. Set your fonts and other formatting of tables or charts while they're still in the spreadsheet, since those attributes don't move when copied or linked and you can't add them in the word processor (though double-clicking on the chart will reopen the spreadsheet, where you can change the formatting). You can insert special characters to print such details as page number, filename, date, and time as well as nonbreaking spaces and hyphens. You can also place borders around paragraphs and insert bookmarks. The program automatically closes up blank lines during mail merge.

DATABASE. To set up a database, just type field names, each followed by a colon. To lay out the form

for easy completion, click on the fields one by one and move them with the mouse. To change the length of a field, use the mouse to stretch a corner of the field's outline. You can put formulas in database fields or use one field to calculate the value in another. There's a query button for wildcard searches. Report formatting allows some calculations on a group of records, including sum, average, standard deviation, and variance. You can also search a database and perform a mail merge with just the records that match the search criteria.

SPREADSHEET. The spreadsheet includes 57 functions, but it's missing some of the features and formatting you might expect from a Windows program. For example, you're allowed to use only one size font per spreadsheet (though you can use such formatting as bold and italics). It's possible to total several spreadsheets into one sheet, but the links aren't live.

OTHER. Microsoft for Windows does not include a communications module, though you can highlight and dial any number in any module using the Dial This Number command. The program tells you when to pick up the phone and talk. For other communications tasks, use the Windows Terminal. Microsoft Works for Windows also includes Note It, a set of color clip art in Windows Metafile format. You can paste a picture as a button in a document, then add text to it. Clicking on the button brings up the text.

Personal Office 4.0

$79.95; Top Ten Software, 40308 Greenwood Way, P.O. Box 1450, Oakhurst, CA 93644; (209) 683-7577
Pros: Full-featured communications module; label-printing module
Cons: Small spreadsheet with few functions; limited database

Personal Office, a bare-bones program with simple screens and a menu structure based on function keys, offers a surprising number of features for its low price. And mastery of its keyboard shortcuts can make such nuts-and-bolts tasks as mail merge a snap. The program lets you specify a default file to be loaded each time you run a module, making routine tasks easier. It even includes a separate module just for printing labels from a database. Unfortunately, however, the manual is not much help when you're learning to use the program, and the graphing module and spell-checker are covered in an eight-page supplement. Personal Office allows only one document open at a time, chosen from an opening menu.

Personal Office 4.0 includes a function that lets you design and print mailing labels using database fields.

To set up a mail merge, open the letter, select the database, then scroll through the pop-up list of fields to place the ones you want. The program uses a series of dollar signs to mark the place of each field in the letter. Since each field looks the same in the letter, however, it's hard to tell which field is where. Personal Office doesn't handle empty fields as well as some other programs—it left blank lines or inserted odd ANSI characters if a field in the merged database was empty. And if a field is too long for the line it's on, the program simply drops the characters it can't print at the end of the line.

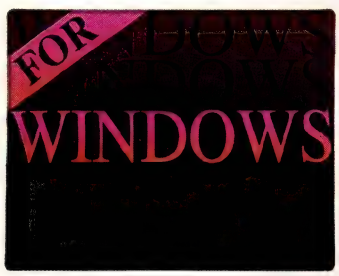
WORD PROCESSING. Formatting documents in Personal Office 4.0 is a bit awkward, since the ruler is in characters rather than inches. Fonts are limited to those available in the printer, though you can use printer control codes to set options for two other fonts. Because you can't import graphics into a word processing document (not even graphs produced by the program's graph function), you'll need to print them separately.

DATABASE. The database permits fewer fields and fewer characters per field than other programs. However, you can query by example and search for text strings in a field.

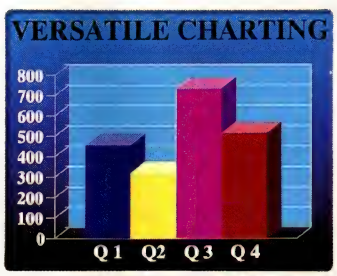
SPREADSHEET. The program's spreadsheet module is the weakest among the programs reviewed here. It's smaller than others (only 200 cells by 52 cells), though its 28 functions offer essential calculating capabilities. You can also protect cells and set the first row and column as titles. However, you can't format entries to include a dollar sign.

OTHER. Personal Office's strong suit is its communications module, which is one of the most versatile among those we examined. It learns and plays back scripts, captures incoming text to file or printer, and supports Xmodem, Ymodem, Zmodem, and Kermit. Another plus is the program's desktop organizer, which includes an appointment book, a calendar, an expense calculator, a telephone book (with airline and hotel phone numbers), a postage calculator (which you can update as rates change), a distance calculator (it's 1,812 miles from Fargo to Orlando), a time zone clock, and even a table for converting miles to meters or Fahrenheit to Celsius.

It could only happen in Hollywood.



Special effects like gradient-filled text and text on a curve give your words a whole new spin.



You also get direct links to spreadsheet files for automatic updating.

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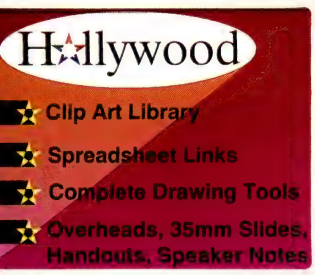

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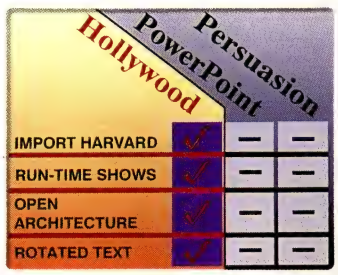
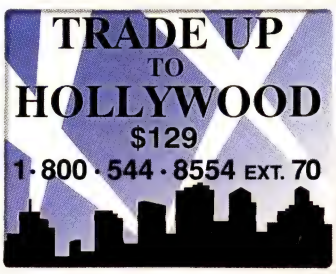
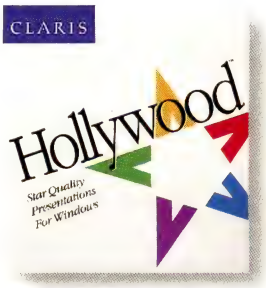


We win in so many categories we're off the chart—even black-and-white charts because Hollywood can colorize them automatically.





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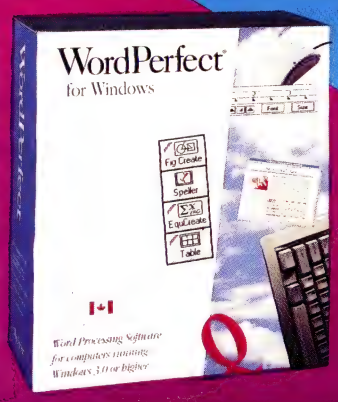
THE BIG ★★★ 3



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PFS:First Choice's unusual cell-naming convention refers to columns as C1, C2 . . . and rows as R1, R2 . . . .

PFS:First Choice 3.11

$149; Spinnaker Software Corp., 201 Broadway, Cambridge, MA 02139-1901; (800) 826-0706
Pros: Database data-entry shortcuts; presentation graphics module
Cons: No print preview; weak spreadsheet

Spinnaker hasn't changed PFS:First Choice since acquiring it last year—the copyright screen and manual still say Software Publishing Corporation. Like other PFS products, each program module is easy to use. However, integration is more difficult than in the other programs reviewed here.

On opening, First Choice offers you the option of creating a document, database, spreadsheet, report, or graph, or of opening an existing one from a list of files, sorted by type. It won't let you open more than one document at a time. To move data or pictures from one module to another, you copy to the clipboard, then open the new document and paste. There's no page-preview mode, so you don't see what a document will look like until you print it. Instead, the program places markers, such as *graph *graphname**, to indicate where you've placed something, and you can't size these elements.

Mail merge is more difficult than with most other programs. Instead of placing a field from an available list, you have to type the field name surrounded by asterisks, which makes errors more likely. First Choice also leaves blank lines if a merged field is empty. The program does, however, let you search and extract only the records you want for the merge. There are a couple of minor inconsistencies among modules—for example, Alt-Q is Quick Entry in the spreadsheet module but Save elsewhere.

WORD PROCESSING. Like most other character-based word processors, First Choice requires that you insert marks to tell the printer to change font style or paragraph spacing. We encountered one problem with this module: It divided a table into two parts when a page break occurred in the middle of it.

DATABASE. As with other programs, you create a field by typing its name followed by a colon. You can calculate fields, specify the type of data allowed in a field, and generate sequential entries to automatically number records. To make entering repetitive data easy, press Alt-D to repeat the data from the same field in a previous entry. Alt-E reproduces the entire record. The program's Find and Replace function makes it easy to change one field in multiple records.

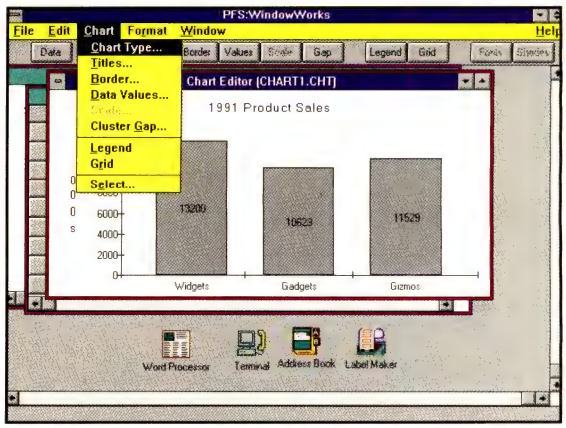
SPREADSHEET. The spreadsheet is awkward and inconsistent with common spreadsheet conventions. Cell addresses are lengthy—cell B2 in most other spreadsheets is cell R2C2. Pressing the left arrow key backspaces one character in a cell, not one entire cell. To type a function, first press Alt-F to bring up a formula box. The program includes several database-like features, including horizontal and vertical lookup.

OTHER. The communications module includes an auto-dialer, and it records and replays scripts. First Choice includes a presentation graphics program for creating text slides, with six fonts, point sizes from 10 to 444, bullets, colors, and borders. There's also a set of disk utilities for file management and disk formatting from within the program.

PFS:WindowWorks 1.1

$149; Spinnaker Software Corp., 201 Broadway, Cambridge, MA 02139-1901; (800) 826-0706
Pros: Excellent text handling; scalable fonts; live links
Cons: No direct link between spreadsheet and chart editor

Spinnaker's PFS:WindowWorks closely matches its sole competitor, Microsoft Works for Windows. However, WindowWorks exceeds the Microsoft program with the impressive text handling and formatting capabilities of its word processor, which are similar to those found in desktop publishing (*continued on page 202*)



PFS:WindowWorks includes a separate chart-editing module. To access another module, click on its icon.

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The Nazca Lines occupy a spread of over 190 square miles of Peruvian desert. Visible only by air, the cutstone lines create geometric designs, animals and figures of birds, like the hummingbird shown. While the purpose of the lines is an intriguing mystery, the most baffling aspect of the lines is how ancient craftsmen could engineer such massive figures without modern equipment or the ability to check their work by air.

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INTEGRATED SOFTWARE Puts It All Together

PROGRAM	Enable Works 4.5	LotusWorks 3.0	Microsoft Works for DOS 2.0	Microsoft Works for Windows 2.0
PRICE	$149	$149	$149	$199
Data import/export	1-2-3, ASCII, dBASE, DIF, Excel, various word processing formats	ASCII, dBASE, DIF, WK1	ASCII, RTF, DCA[1], WordPerfect[1]	1-2-3, ASCII, dBASE, RTF, various word processing formats
Graphics import	PCX	None	None	BMP, CGM, EPS, PCX, TIFF, WMF
Documents/files open at once	8	9	8	8
Macros	Yes	Yes	Yes	via Windows
WORD PROCESSING				
Thesaurus	Yes	Yes	Yes	Yes
Fonts	Printer-based	Bitstream	Printer-based	Windows
Print preview	Yes	Yes	Yes	Yes
DATABASE				
Number of fields	254	254	256	256
Number of characters per field	254	254	256	256
Number of records per database	◉	◉	4,096	32,000
Searchable notes field	Yes	Yes	Yes	Yes
SPREADSHEET				
Number of functions	100 plus	78	57	57
Number of graph types	13	5	6	31
COMMUNICATIONS				
Auto-dialer	No	Yes	Yes	Yes
Upload/download protocols	Xmodem, Ymodem	ASCII, Kermit, Xmodem CRC, Xmodem, Ymodem	ASCII, Xmodem	N/A[2]
Number of entries in dialing directory	256	◉	◉	N/A[2]
Uses logon scripts	Yes	Yes	Yes	N/A[2]
EDITOR'S RATINGS				
Integration	♦	♦	♦	♦
Word processing	◇	◇	◇	♦
Database	♦	♦	♦	♦
Spreadsheet	♦	♦	♦	♦
Communications	◇	◇	◇	N/A

[1] Conversion program available separately. [2] Uses Windows terminal. [3] Couldn't be tested in prerelease version.

◉ Limited by disk space.

EXCELLENT ◆ ◆ ◇ ◆ ◆ DISAPPOINTING

Personal Office 4.0	PFS:First Choice 3.11	PFS:Window-Works 1.1	Venture: The Entrepreneur's Handbook 2.01	WordPerfect Works 1.0
$79.95	$149	$149	$149.95	$249
ASCII	ASCII, various word processing formats	ASCII, CSV, DBF, First Choice, RTF, WK1, WKS	ASCII, DBF, WK1	ASCII, DBF, HPGL, WK1, WKS
None	First Publisher, Harvard Graphics	BMP, PCX, TIFF	None	CGM, EPS, GEM, HPGL, IMG, PCX, PIC, TIFF
1	1	7	1	8
No	Yes	via Windows	No	Yes
No	Yes	Yes	No	Yes
Printer-based	Printer-based	Publisher's PowerPak	Printer-based	Printer-based
No	No	No	Yes	Yes
20	◆	125	50	100
78	◆	254	600	8,000
2,000	◆	32,000	500	◆
No	No	Yes	Yes	Yes
28	34	40	32	100 plus
6	4	9	8	7
Yes	Yes	Yes	N/A	Yes
ASCII, Kermit, Xmodem, Ymodem, Zmodem	ASCII, Xmodem	ASCII, Xmodem, Ymodem	N/A	ASCII, Kermit, Xmodem,Ymodem, Zmodem
32	10	◆	N/A	1,024
Yes	Yes	Yes	N/A	Yes
◇	◇	◆	◇	◆
◆	◇	◆	◇	◆
◇	◆	◆	◆	◇
◆	◆	◆	◇	◆
◆	◇	◆	N/A	N/A[3]

(*continued from page 197*) programs. Integration is easy and intuitive, with live links to keep your documents up to date.

WindowWorks opens the word processing module when you load the program. To choose another module, click on an icon at the bottom of the screen. You can open multiple documents at once, but only one of each type. To establish live links to a word processing document, insert a table, chart, or picture frame. Choose the "auto update" option to automatically update the data each time you open the document. WindowWorks includes a separate label- or envelope-printing function—you specify return address or format for printing on the screen. Mail merge is easy: Just identify the database, then point and click to select the field. Choose "Collapse white space" when inserting a field, and the program eliminates extra blank lines when printing.

WORD PROCESSING. The word processor includes a button bar for text formatting. Page formatting is superior to that in most of the other programs reviewed here—for example, you can choose whether to print text over a graphic or wrap text around it. You can scale and crop graphics in the word processor, set up a table of contents and index, or organize a document as an outline. The program ships with Publisher's PowerPak, a printer driver that lets you scale fonts from 4 to 127 points, regardless of your printer's resident fonts.

DATABASE. To set up a database, click the Field button to create each field, then click the Text button to label it. To lay out a data-entry form, grab a field with the mouse and place it. Your layout might be somewhat sloppy, since it's hard to place the fields perfectly without a grid. The program provides for a 5,000-character memo field. You can query by example, but the program finds only one record at a time. You can extract data from a large database and create a smaller set.

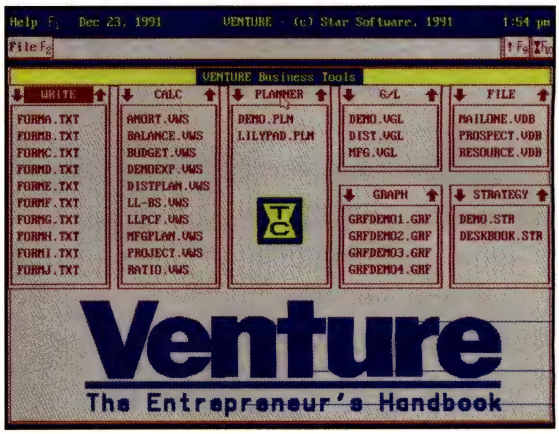
SPREADSHEET. The spreadsheet is basic. You can copy from one cell to a range. Though you can't sort entries, the program includes such functions as horizontal and vertical lookup. There's also a separate chart editor, not directly linked to the spreadsheet. To create a chart, import the spreadsheet's data or type it in yourself. Chart titles and legends can be customized.

OTHER. WindowWorks supports several file-transfer protocols, and you can write and replay scripts and capture incoming text. The program also includes a calendar and address book.

Venture: The Entrepreneur's Handbook 2.01

$149.95; Star Software Systems, 363 Van Ness Way, Torrance, CA 90501; (310) 533-1190
Pros: Business plan and strategic planning modules; graphing module
Cons: Tedious mail merge; no graphics file import

Venture is designed to help small-business owners plan and run their businesses, not just keep records and write letters. Therefore, it includes functions and modules you won't find elsewhere—modules for business-plan building and strategic planning, a check writer, and a basic general ledger, for example. The program also includes 18 sample documents (mostly form letters and simple legal agreements).



Venture includes a financial planner and a strategic planning tool in addition to the standard modules.

Venture's opening screen lists the modules and the files available in each. You must exit one module to return to the main screen to open another module. You can't import graphics of any kind, but you can import table data from a spreadsheet (by copying data to the clipboard and pasting it) and run a mail merge. Inserting fields for mail merge in Venture is tedious—you must type the field name surrounded by double arrows (<< and >>). Unfortunately, as with Personal Office, long entries don't wrap properly to the next line, and the program doesn't skip blank lines if a merged field is empty.

WORD PROCESSING. Venture's word processor is basic but easily mastered, with function keys or hotkeys for most commands. You choose the fonts at setup, based on your printer. You can create headers or footers, and the program includes a spell-checker and a search-and-replace function.

DATABASE. Creating fields is easy. Press F3 to create a new field and F4 to specify its type (text, comment, number, money, zip code, date, phone, or social security number). You can query by example and search for text strings in the comment field.

SPREADSHEET. The program's spreadsheet has 32 functions, including lookups. You can lock titles, protect cells, and even draw lines and boxes around cells, with a choice of line widths. The program includes a sample expense-tracking worksheet.

OTHER. Venture includes a separate graphing module, with wide fonts and formatting. Though the module isn't directly linked to the spreadsheet, you can copy data into the graph module from a worksheet. The general ledger contains the basics—cash receipts and disbursement journals, income statements, and balance

sheet reports. The strategy module is an outliner to help you establish a mission statement and write your underlying goals and objectives.

WordPerfect Works 1.0

$249; WordPerfect Corp., 1555 N. Technology Way, Orem, UT 84057; (800) 451-5151, (801) 225-5000
Pros: Full-featured spreadsheet; graphics editor
Cons: Awkward database creation; no live links

WordPerfect Works is a much-improved replacement for WordPerfect Executive. WordPerfect has combined LetterPerfect, its low-end word processor, with stripped-down versions of DrawPerfect and the spreadsheet PlanPerfect and added a database and communications module to make a surprisingly strong integrated program. We tested a prerelease version of the package for this article.

Works lets you open with WordPerfect's familiar DOS Shell or directly into any of the modules. Besides the basics (word processing, spreadsheet, database, and communications), the program includes a graphics editor and three specialized, customizable databases—an address book, note cards (index cards on disk), and an inventory (the sample includes a record of compact disc recordings). You can open only one document in each module at a time. Once in a module, you can switch between them through a Run menu. To move data from one module to another, copy it to the clipboard, switch to the other module, then retrieve it from the clipboard. The links aren't live.

Graphics can be imported to the word processor (after conversion to the required WPG format through an external conversion utility) or created in the graphics editor, then moved. Spreadsheet graphs are easily imported, as is table data, though if you want boxes around the cells you have to draw them yourself. Graphs and graphics can be sized from the menu and can be placed left, right, or center in the document. The program draws an empty box onscreen to mark the location of graphics, but you have to check print preview to see what it looks like.

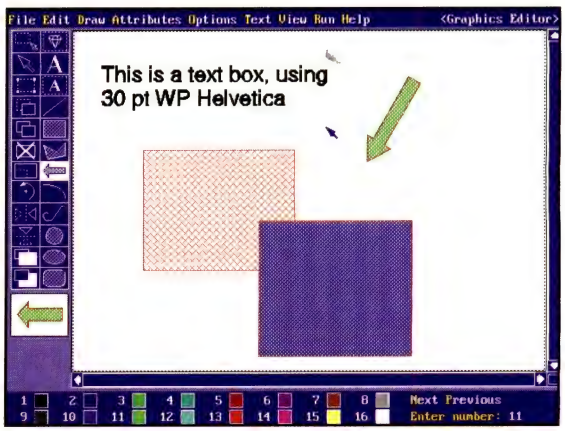
You can mail merge using two word processing files (as in WordPerfect) or a Works database. To insert merge codes, choose Merge Codes from the Tools menu and scroll through the list to the one you want. However, you have to remember the list of field names since the program doesn't link the document to a specific database and then list the field names, as other programs do. The program doesn't delete blank lines when merging; you do that yourself before you print the merged document.

WORD PROCESSING. Works uses LetterPerfect, a scaled-down, menu-driven version of WordPerfect 5.1. Mysteriously, the word processor offers only fonts available through your printer, but both the spreadsheet graphing function and the graphics editor offer scalable fonts in several styles—the text in the imported graphs looks much better than the document surrounding it. Unlike most other programs here, the word processor includes an outliner. Print preview is by page only—there's no Page Up or Page Down for scrolling through the document.

DATABASE. The database is a great improvement over the Address Book in Executive, though it's neither as strong nor as easy to use as those in other programs. Designing a new database is awkward—it takes some work to figure out how to create a new field (Alt-F8), edit it (Shift-F8), then type labels. We tended to place the fields on top of their labels until we got the hang of it. The terminology is also confusing—to add a new record, use the Create command (Ctrl-C). You can mark records based on a search (including text strings in a memo field), then save them as a separate file.

SPREADSHEET. WordPerfect Works' spreadsheet is fairly strong—a pop-up menu offers many formulas to choose from. You can format one cell at a time, a block of cells, or a block of columns. However, despite many formatting choices (percentage, scientific, even accounting), you can't eliminate the two decimal places for currency. The spreadsheet includes search and replace, named ranges, data fill, conversion of formulas to values, and the ability to freeze titles. The graphing function includes font and size choices for titles and legends, as well as color and pattern choices for bars.

OTHER. The graphics editor (a scaled-down version of DrawPerfect) is one of the best of the programs we reviewed. It includes scalable fonts, 16 fill patterns, 16 colors, arrows, and a snap-to grid. You can size, rotate, mirror, and group/ungroup elements. Note Cards, Address Book, and Inventory are sample databases. You can change the fields and layout to meet your needs. We weren't able to test the communications module in the preliminary version of the software. According to the company, the program will include a dialing directory, text capture, and file-transfer protocols. ◪



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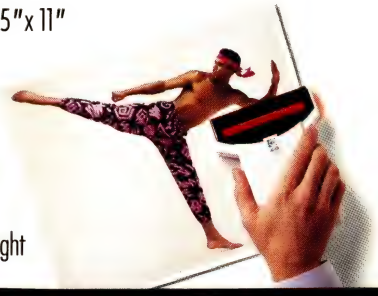

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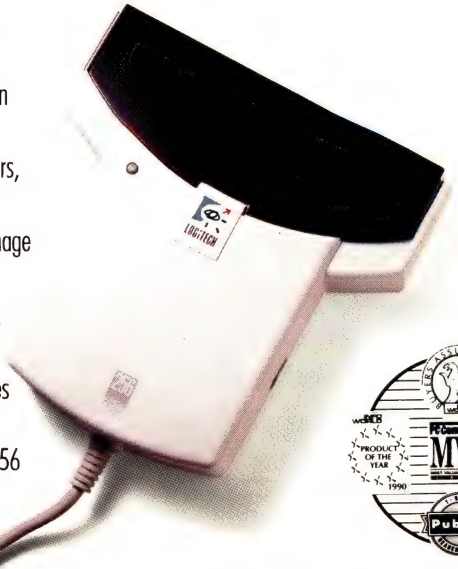

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HOW TO BUY A

TAPE BACKUP

Follow this guide to determine your needs.

HOW OFTEN DO you back up your hard drive? Probably not as often as you should. Feeding 40 floppies into your A: drive to back up 60MB ranks up there with cleaning the basement. But tape backup offers a fast, easy way to make secure copies of critical files. And it's not as expensive as you might think—an internal drive can cost as little as $2.50 per megabyte.

Tape devices come in a range of sizes and prices. Quarter-inch tape drives are available on the street for as low as $235, while 4mm and 8mm digital audio tape drives designed for network backup can cost $5,000. For most standalone PCs, a DC-2000 or DC-6000 quarter-inch drive offers sufficient capacity. But once you've decided on a quarter-inch drive, there are still options, features, and standards to sort through.

Cartridge tapes aren't interchangeable in the same way as floppy disks, which can be read by any drive of the same size and density. The industry group Quarter-Inch Cartridge Drive Standards (QIC), however, has standardized how data is formatted on tape, making drives easier to compare. Usually, files backed up on one tape drive can be read by another drive with a comparable format and the same software. The following guidelines will help you choose a quarter-inch drive that meets your needs.

Capacity Quarter-inch drives come in two cassette sizes. Cartridges for DC-2000 tape drives measure about 3.5 by 2.5 inches, hold 40MB to 640MB, and are practical for standalone PCs. DC-6000 tape drives have larger cartridges (about 6.4 by 4.3 inches) that hold 150MB to 1GB; they are better suited to large-capacity drives and networks. Look for a drive at least the capacity of your hard disk. If you plan to upgrade your system, get a larger drive or make sure the software allows backup to multiple tapes.

Standards QIC-40 and QIC-80, the formatting standards for DC-2000 drives, determine how the data is stored on the tape (track position and width) and how it's organized (position, order, and the way data is interpreted). Since most QIC-40 drives use the same physical and logical formats, any QIC-40 drive will read and write tapes to any other QIC-40 machine. The QIC-40 standard was developed to format 40MB tapes. QIC-80 adds extra capacity with data compression. All QIC-80 drives can read QIC-40 tapes.

For each standard, drive capacity varies. A QIC-40 drive may hold 40MB, 80MB, or 120MB tapes. The last three digits in a tape drive's model number is often the tape ca-

PHOTOGRAPH BY MARK JOHANN

By Jan Smith

RIVE

pacity—a QIC-40 DC-2120, for example, is a DC-2000 drive that follows QIC-40 formatting and uses longer tapes and data compression to increase capacity to 120MB.

If you expect to exchange tapes formatted on other drives, make sure your drive has backward-read compatibility. That means, for example, that a QIC-40 40MB or 80MB tape can be read in your QIC-40 120MB drive, provided you used the same backup software. Be aware, however, that since data compression algorithms are proprietary, tapes recorded with data compression will probably be unreadable by drives not identical to yours.

Makers of DC-6000 drives are consolidating data-formatting standards, but as yet there are no guidelines that allow comparison and compatibility among drives, as there are with DC-2000 systems Tape systems that have the same cartridge standards and use the same backup software, however, will probably have compatible tapes.

QFA Quick File Access, or QFA, is available on both DC-2000 and DC-6000 drives. Most backup software records a file index of the tape's contents at the beginning of the tape. QFA drives check the index, then advance to the file's location, making file retrieval considerably faster than with non-QFA drives, which read every file along the way.

External vs. internal An external tape drive includes a separate controller card and requires a slot in your PC. An internal drive is cheaper (usually by $100 or more), requires a spare drive bay, and may or may not require a separate controller card. (Some internal drives use your floppy drive controller.) Newer internal DC-2000 drives will usually fit in a 1-inch space (used by some portables or small-footprint desktop machines), while internal DC-6000 drives require a half-height drive bay.

Most internal drives and all external drives require a dedicated controller card or use an adapter that plugs into your system's SCSI controller. Make sure the card and adapter are included with the system. Tape drives with separate controller cards are typically faster and more expensive than those that use a floppy controller because they buffer the data and thus have a higher throughput rate.

An internal DC-2000 tape drive may be able to share the floppy drive connector if you've got only one floppy drive. Since most floppy drive controllers are designed for two drives, just connect the tape drive to the connector reserved for a second floppy drive. However, check your PC's manual to make sure that the floppy drive's and the tape drive's data-transfer rates are compatible—usually either 250 or 500 kilobits per second. If you don't want to give up your second floppy drive, a Y-connector (an extra $50 to $100) may let you add the tape drive to your floppy drive controller, allowing both floppy drives and the tape drive to run from one controller.

Software Make sure your drive manufacturer includes backup software. Most do.

Whether you're planning to regularly back up everything on your hard drive or just specific files, make sure the software allows you to back up and restore file by file. Unlike older "image" tape backup systems, which copy everything on your hard disk including bad sectors, file-by-file backup defragments your data and stores files contiguously. That gives you greater control and makes restoration of a single file much faster.

Look for software that allows you to schedule automatic, unattended backups to take advantage of times when your PC isn't being used. Or, if security considerations require that you be present when you back up your disk, get software that will run in the background, using expanded or high memory, or under Windows or OS/2.

Software that estimates the time required for backup or gives you the status of the tape (such as how much free space remains) will make backup less frustrating. (Indicator lights on the drive itself are even more helpful.) Look for software that's capable of incremental backup, meaning it will back up only files that have been changed, and that lets you append backup sets—that is, add files to the end of the tape without disturbing files that are already backed up.

The software should include error correction and verification procedures to make sure the saved files are accurate. If you use data compression, more data fits on a tape, but backup takes longer. Remember also that compression will probably make your tapes unreadable in drives that use different software.

If your tape has less capacity than your hard drive, you'll need software that will back up to multiple tapes. If you have disk partitions larger than 32MB, make sure the software will recognize them.

Speed You can expect speeds of 2.5MB to 12.75MB per minute on a DC-2000 drive. DC-6000 systems range from 5MB to 30MB per minute. If you're going to back up in the dead of night, speed may be less important, but if you must be present during backup, look for a faster drive. The drive should restore data slightly faster than it performs the original backup.

Tapes Depending on capacity, tapes for DC-2000 drives cost $20 to $40 each, while DC-6000 cartridges cost $25 to $75. Formatted tapes cost about $1 more. Formatting a tape can take as long as an hour, so if you'll need many backup tapes for archiving, buy them formatted.

It doesn't matter which unformatted tapes you choose, as long as they meet ISO or ANSI standards. If you buy formatted tapes, make sure they match your drive standards and software.

Warranty and Support Look for at least a one-year warranty on a new drive, and buy from a dealer that offers a 30-day return period. ◪

All wins.

PC WEEK POLL: 40-60M-BYTE INTERNAL TAPE DRIVES

	Overall Weighted Score	Mean Median Installed Base	Overall Reliability	Overall Performance	Ease of Use	Clarity of Documentation	Complete. & Organiz. of Documentation	Quality of Product Support	Value Relative To Cost	Accessibility of Product Support	Ease of Installation
Colorado DJ-10 (Colorado Memory Systems Inc.)	84	3.6/2.0	89	88	89	80	80	78	91	78	83
Mountain FileSafe TD4440 (Mountain Computer Inc.)	78	4.7/2.0	83	82	82	74	74	73	80	72	79
ArchiveXL 40 (Archive Corp.)	77	6.4/3.0	84	81	84	76	76	70	79	68	77
Tecmar QT-40i (Tecmar Inc.)	77	6.9/3.0	82	82	81	73	73	72	73	77	77
Everex Excel 40AT (Everex Systems Inc.)	76	3.8/2.0	83	80	80	69	71	70	77	72	76
Irwin Model 145 (Irwin-Cipher Data Products Inc.)	72	8.9/2.0	77	76	74	70	70	68	71	67	74
Tallgrass TG-1140 (Tallgrass Technologies Corp.)	68	2.5/2.0	72	72	73	64	67	66	64	66	67

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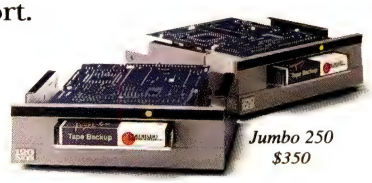

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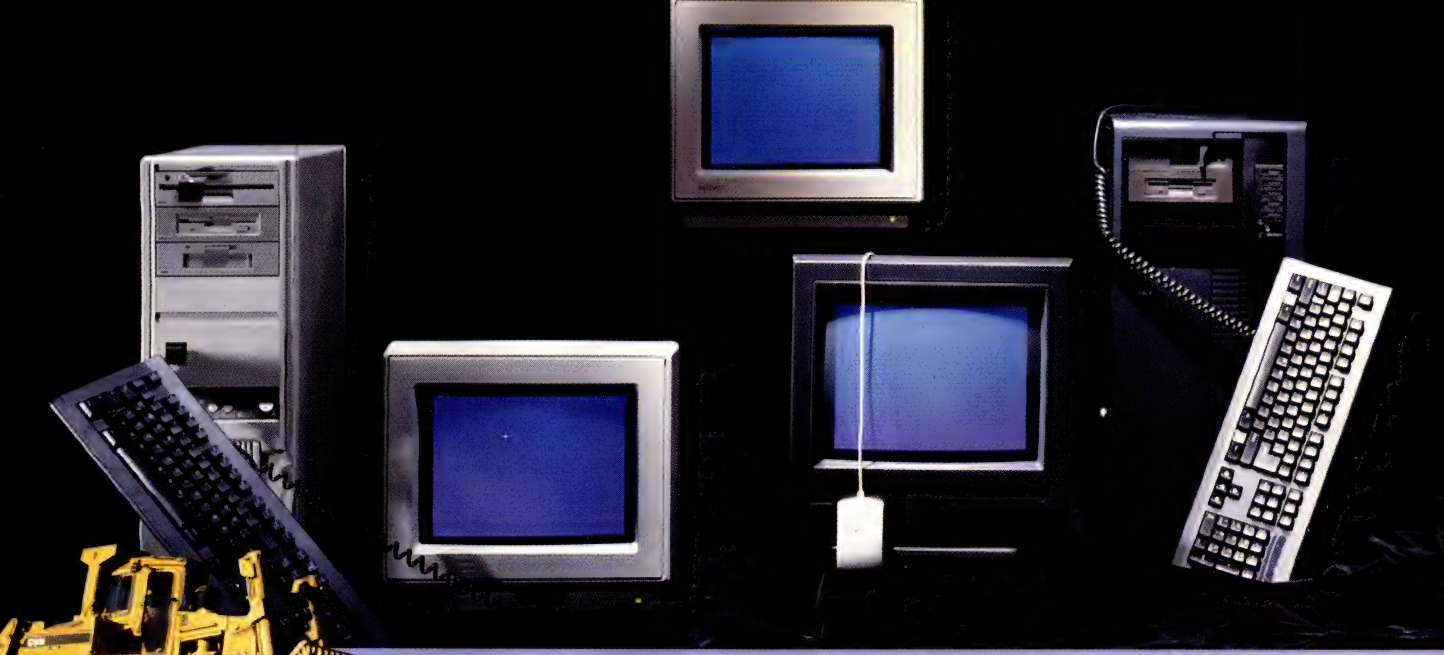

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COMPUTER DOCUMENTATION CLEARLY *doesn't cut it for the nearly 500 respondents to our December 1991 fax poll. The majority had frustrations and complaints to share, and even those few respondents who had favorable comments admitted that good documentation is generally the exception, not the rule. And* everyone *had advice for manufacturers on how to make documentation more useful.*

It's no wonder that respondents feel so strongly about the computer documentation they use. More than 90 percent of them depend on it to get their computer products up and running; 87 percent rely on documentation for troubleshooting when something goes awry; and 85 percent use it as a command reference. Fifty-four percent of respondents use computer documentation for tutorials, while a mere 3.6 percent consider it a last resort when they can't get through to technical support.

In fact, calling technical support is the last resort for most respondents—provided they can *call. One reader wondered if computer product manufacturers even realize just how essential documentation is to some users: "Vendors seem unaware that in many corporate and government environments, the technical help line is not available to the end user because registration numbers are not available to him or her—the disks are locked up somewhere or the registration cards have been thrown away by somebody rather than mailed in. Maybe tech help is a 900 number, or the help line doesn't accommodate rotary phones. The plain truth is that many users are left to their own devices, and a responsible and competent manufacturer/publisher should see to it that documentation is complete, accurate, and thoroughly indexed."*

By Christine Grech

ILLUSTRATION BY GENE GREIF

MANUAL
inside

WHAT'S WRONG?

✍ SOFTWARE DOCUMENTATION. We asked respondents to rank the features of software manuals in order of importance, with 1 being most important and 5 being least important. A thorough index came out way ahead in this contest, earning an average score of 1.59, followed by a command reference (3.19), a good table of contents (3.53), screen images (4.02), and a walk-through tutorial (4.09). Bringing up the rear were features less likely to affect how you use the documentation: a spiral binding that allows pages to lie flat (4.5) and the use of color to highlight important points (4.93). Many of you listed other features you'd like to see in software manuals, ranging from more examples and a troubleshooting guide to large type and an easy-to-find list of technical support phone numbers.

Gripes about software documentation varied. Some readers lamented the lack of error message explanations and fixes, while others called for a list of all software files so that extraneous ones could be deleted. One respondent expressed frustration at the proliferation of READ.ME files. "Get the program and documentation straight before it goes out the door!"

Several complaints appeared repeatedly. The most common refrain was that software documentation is poorly indexed, and as a result you can't find the answers you need. One respondent was frustrated at having to guess how (or if) something is listed in the index, and another said, "If you can find what you need, you probably don't need it." Respondents also rapped software documentation that assumes too much knowledge on the user's part or that lacks details and examples. As one reader said, "I resent buying a program, then having to buy a book or tutorial to find out how to run it." Another summed up users' frustration with overly technical documentation in this advice to manufacturers: "Spend some money, time, and effort on making the text clear and intelligible to the ordinary customer out there. Anticipate misunderstandings; fill in lacunae. (And if you don't know what *that* means, maybe you can appreciate the difficulty of understanding cryptic and coded instructions.)"

✍ ONLINE HELP. What matters most for users of online documentation (on which our respondents seem to rely less frequently than on old-fashioned manuals) is context-sensitive help, which earned an average score of 2.01, followed by a detailed explanation of commands (2.31), searchable help files (2.70), and an online tutorial (2.91). Bringing up the rear was a bookmark feature (4.29). The two most-requested features not included in our ranking were page references to the complementary man-uals and the ability to print help files.

✍ HARDWARE DOCUMENTATION. Respondents found hardware documentation skimpy even compared with the maligned manuals to software programs. Our request for a ranking of features elicited no numbers on some questionnaires; instead we found comments such as "Oh, you mean hardware has documentation?" As with software manuals, an index was considered the most important feature, rating a 2.36. Next in importance were a thorough explanation of configuration options (2.46), photos or illustrations to accompany installation instructions (2.67), a troubleshooting guide (2.93), and detailed system specifications (3.69). Also on your hardware wish list were requests for more schematics, BBS support, and a toll-free technical support phone number.

The most common gripe about hardware documentation was that it's incomplete. One respondent complained that it "seems to be for those that already know all about the hardware." As with software documentation, respondents found that hardware manuals assume too much knowledge and contain poor indexes. Other sources of frustration were poor translations of foreign languages, incomplete explanations of configuration options, and illustrations that don't represent the actual hardware.

DON'T REINVENT THE WHEEL

When we asked users to give one manufacturer one suggestion for improving one computer product's documentation, we hoped you'd be specific. Instead, we received mostly general comments, your justification being that most documentation was so lousy that all manufacturers should heed your advice.

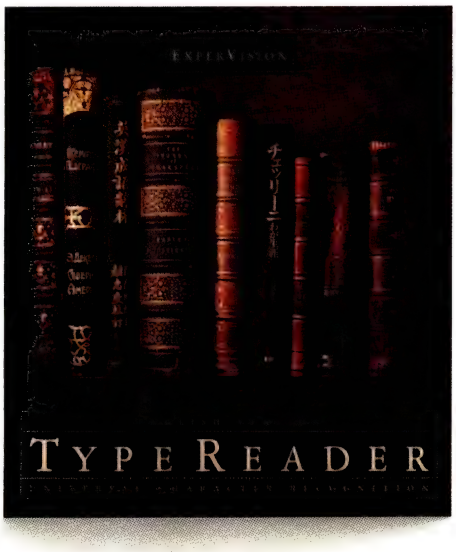
A majority stressed the need for well-organized, readable manuals. To this end, respondents suggested manufacturers hire professional writers and not leave the job to less-objective technicians. "Make sure your writers are as qualified to do their job as good pilots, librarians, and teachers," one respondent said. A technical writer with 25 years of experience said, "Technical writing is a special branch of the art of writing; it combines technical knowledge (which is a science) with the arts. The best technical journalist is a person with technical education, experience, and writing talent. That makes a technical writer a rare bird indeed, and not one in ten employed in the technical writing field can meet these qualifications."

Other words of advice to computer product manufacturers: "Stop telling me how to turn on my computer, and tell me more about software/hardware options and commands"; "Hire a professional indexer who knows how to do a thorough job"; "Be as detailed as possible. Nothing is as aggravating as reading about a useful shortcut in another source"; and finally, "Imitate the successes. Don't reinvent the wheel."

And if manufacturers think documentation is not as vital as the product itself, users warn them otherwise. "Spend the time and resources to do it right. It pays off in product reputation and value in the long run." Another said, "Hire qualified writers. Make that team equivalent in status to the development team." Many respondents suggested that computer documentation be beta-tested by novices and average users to determine if it works.

Putting it all in perspective is a respondent who advises, "Consider the reader. Not everyone is an expert, nor cares to be. We just want useful products that enhance our productivity." ◪

IT READS ALL THE GREAT NOVELS, ESSAYS, TRAGEDIES, AND SONNETS.



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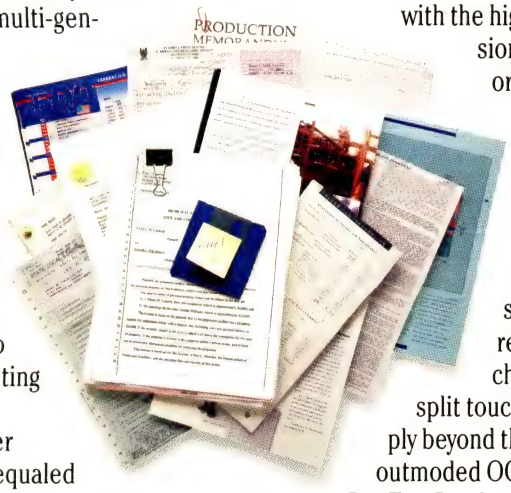

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† Kanji includes thousands of complex characters that are used in Japanese writing. This English version of TypeReader does not read Kanji. †† "What you SCAN is what you get."

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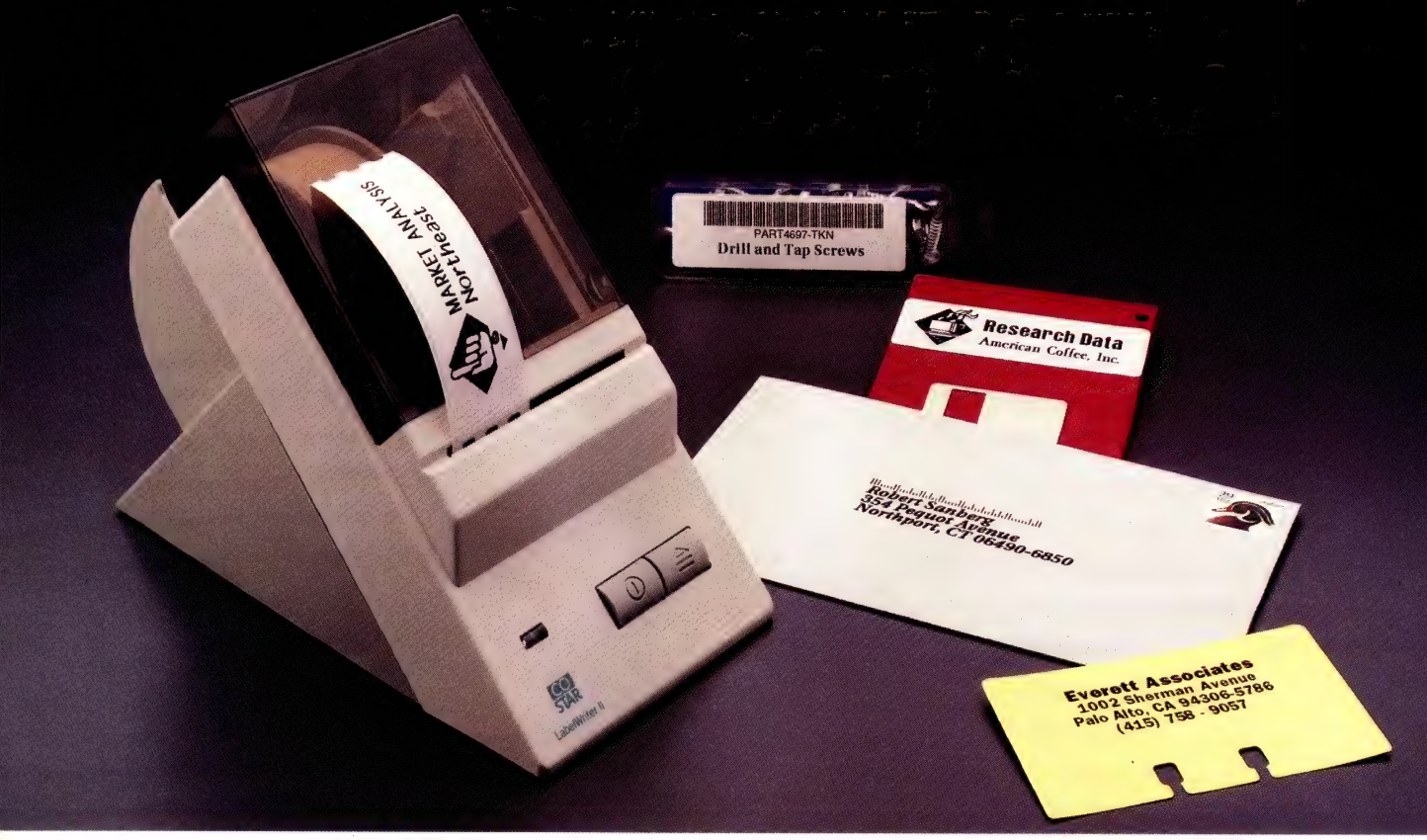

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1. Today's Shelfware

Take a good look at the software on your shelf (or on the floor, or wherever you keep software you don't use). For each package, fill in the following information:

Program name: _____

Approximate cost: $_____

How you got it: ☐ Bought it myself ☐ Bought by my company ☐ Other (explain) _____

How long you used it: months _____ days _____ hours _____ minutes _____

Why it ended up on the shelf: _____

_____

Program name: _____

Approximate cost: $_____

How you got it: ☐ Bought it myself ☐ Bought by my company ☐ Other (explain) _____

How long you used it: months _____ days _____ hours _____ minutes _____

Why it ended up on the shelf: _____

_____

Program name: _____

Approximate cost: $_____

How you got it: ☐ Bought it myself ☐ Bought by my company ☐ Other (explain) _____

How long you used it: months _____ days _____ hours _____ minutes _____

Why it ended up on the shelf: _____

_____

2. Tomorrow's Shelfware

Take a good look at the software on your PC right now. What's going to be the next casualty—the first program you'll dump when a better (or simply more interesting) package comes along?

Program name: _____

Approximate cost: $_____

How you got it: ☐ Bought it myself ☐ Bought by my company ☐ Other (explain) _____

How long you have used it: months _____ days _____ hours _____ minutes _____

Why it's going to end up on the shelf: _____

_____

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The ancient Inca ceremonial site of Machu Picchu, high up in the Peruvian Andes, has long mystified historians, scientists and engineers by the precision of its stonework. Massive granite blocks were systematically cut and set without the use of mortar – yet the joints between them are barely visible. Though they were an advanced civilization, the Incas had no iron tools or other materials to achieve this level of quality. How, then, was it accomplished? Through levitation? Psychic powers? Extra-terrestrial assistance? The answer continues to elude us.

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DOS

Demystifying DOS 5.0's CONFIG.SYS Commands, Part I

A LIST OF COMMANDS TO INCLUDE IN YOUR SYSTEM CONFIGURATION FILES, WHAT THEY DO, AND HOW BEST TO USE THEM. **BY JEFF PROSISE**

TO MANY USERS, one of the enduring mysteries of the PC is the meaning of CONFIG.SYS commands. This month and next, we'll take a look at the 15 configuration directives that DOS 5.0 supports and offer advice on using them effectively. In the first installment, we'll examine (in alphabetical order) the commands BREAK through DRIVPARM. Next issue, we'll pick up where we left off with FCBS and proceed all the way through SWITCHES.

BREAK Enables and disables extended Ctrl-C (break) checking. By default, DOS won't check whether you've pressed Ctrl-C to interrupt a command until it reads characters from the keyboard or outputs data to the screen or printer. When DOS is tied up performing other operations such as accessing your hard disk, you could stand on the keyboard and still be unable to get DOS's attention. If this is a problem, add a line reading BREAK=ON to your CONFIG.SYS file. BREAK=ON makes DOS check for Ctrl-C more frequently. Be aware, though, that it slows things down slightly.

BUFFERS Controls how many disk buffers DOS sets up in memory. Buffers cache disk data to enhance disk performance. No matter how fast your hard disk is, it's still one of the slowest parts of your system. Floppy drives are even slower. To keep such devices from being a drain on overall system performance, DOS caches data going to and from the disk in RAM-based buffers. When a program reads a sector from a disk, DOS searches the buffers for the requested data and delivers it from the cache if possible, eliminating the need for a physical disk access and speeding up effective drive operation as a result. Up to a point, higher BUFFERS settings result in faster disk performance. However, you can quickly reach a point of diminishing returns, where it takes DOS longer to search the cache on every disk access than it would to access the disk outright. Furthermore, each disk buffer requires 532 bytes of RAM. A setting of BUFFERS=20 usually strikes a reasonable balance between speed and RAM consumption.

TIP: If you're running DOS 5.0 on a 286 or higher, load DOS into the High Memory Area (HMA) by including a DOS=HIGH statement in your CONFIG.SYS file. The disk buffers created by BUFFERS also go in the HMA—but only if BUFFERS is set to 48 or less. This reduces BUFFERS' conventional memory consumption to a total of 512 bytes. If you use programs that perform lots of sequential disk accesses, you may be able to speed them up even more by specifying a secondary cache size of 4 to 8, as in BUFFERS=20,4. If you use SmartDrive or a third-party caching program such as Multisoft's Super PC-Kwik Disk Accelerator, set BUFFERS to something in the range of 4 to 10 so it won't interfere. DOS uses an unsophisticated caching algorithm that doesn't deliver the performance that third-party caching programs do.

COUNTRY Specifies the country whose language conventions DOS should adopt. The directive affects the time and date formats DOS (and DOS commands such as TIME, DATE, BACKUP, and RESTORE) recognizes. It also affects information DOS provides to application programs regarding currency symbols, decimal separator characters, sort ordering, and more. American English–speaking PC users can ignore it.

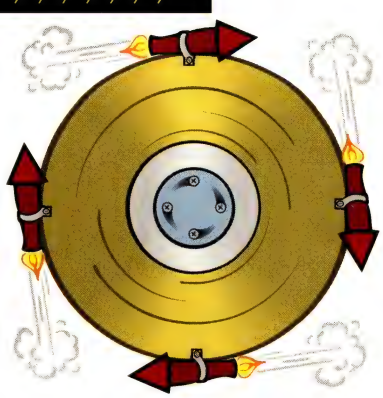
DOS Helper

SMARTDRIVE

Most third-party disk caching utilities are superior to DOS's BUFFERS command when it comes to performance. But if you're running DOS 5.0, you already own a great disk caching utility. It's called SmartDrive, and it's stored in the DOS directory of your hard disk under the name SMARTDRV.SYS. To get an immediate boost in hard disk performance, add the command

```
DEVICE=C:\DOS\SMARTDRV.SYS 1024
```

to CONFIG.SYS to load SmartDrive into extended memory with a buffer 1MB in size. If you prefer to cache in expanded memory instead, add a /A switch to place SmartDrive's disk buffers in expanded memory.



DEVICE Loads an installable device driver into conventional memory. DEVICE is arguably the most powerful of the CONFIG.SYS directives. With it, you can custom-configure DOS by loading device drivers that serve as a low-level interface between hardware and software. For example, the command

```
DEVICE=\DOS\RAMDRIVE.SYS 720 /E
```

creates a 720K RAM disk in extended memory using DOS 5.0's RAMDrive RAM disk device driver.

DEVICEHIGH Loads an installable device driver into upper memory. DEVICEHIGH is just like DEVICE, except that it loads device drivers into upper memory blocks created by EMM386.EXE or other memory managers. Loaded in upper memory, device drivers won't reduce the largest executable program size reported by the MEM command.

TIP: If your computer is configured to load TSRs and device drivers high, you can optimize RAM usage by replacing all occurrences of DEVICE with DEVICEHIGH. *Exception:* Neither HIMEM.SYS nor EMM386.EXE can be loaded high. Be sure to have a bootable floppy disk on hand when you experiment with DEVICEHIGH in case loading a driver high locks up your PC.

DOS Specifies whether the DOS kernel should be loaded high (in the HMA) or low (in conventional memory), and whether DOS should allocate upper memory blocks (UMBs) created by EMM386.EXE for its own use. The statement DOS=HIGH in CONFIG.SYS saves up to 60K of RAM by transferring DOS from conventional memory to the High Memory Area. It requires at least a 286. If you plan to load TSRs and device drivers into upper memory, your CONFIG.SYS file must contain the statement DOS=UMB.

These two statements can be combined into the single statement DOS=HIGH,UMB. For it to be effective, you should always accompany the command DOS=HIGH with a DEVICE statement that loads HIMEM.SYS. Similarly, DOS=UMB must be accompanied by DEVICE statements loading HIMEM-

Hot Tips

Directory Listings Made to Order

Want the DIR command to list files in a particular order without your needing to remember arcane switch combinations? Wish the list would pause between screens? Use the right SET command in your AUTOEXEC.BAT file under DOS 5.0, and you can get just what you want by typing DIR. Let's say you want your files listed alphabetically. First open AUTOEXEC.BAT in the DOS Editor. Enter the following line toward the end:

```
SET DIRCMD = /O:N /P
```

The /O switch setting ensures an alphabetical DIR listing; the /P switch, a software scroll lock that pauses when the screen is full.

In place of the alphabetical listing, you can substitute a reverse alphabetical listing (enter -N instead of N after the /O:) or an alphabetical listing by extension (E or -E after the /O:). You can also list files by age (D for the oldest first, -D for the newest), by size (S for smallest first, -S for largest), or by first or last directory (G first, -G last).

CRAIG SMALLEY

Reset Your Screen's Background and Text Colors

Tired of white-on-black DOS text screens? Here's an easy way to set the screen foreground and background colors to any combination of colors DOS can show. When the sequence is implemented, you'll be able to set the screen colors by entering a simple command from the DOS prompt. To use green on red, for example, you'd simply enter COLORS GREEN RED. You need three things to do this. First, ensure that your CONFIG.SYS contains an ANSI device statement such as DEVICE=C:\DOS\ANSI.SYS. Second, create the following short GW-Basic/QBasic program (be sure to save the file in pure ASCII text format). Name the file COLORS.BAS and save it in the same directory as your BASIC compiler (usually your DOS directory). (*Note:* Enter each indented line as a continuation of the previous line—all the lines you enter should begin with a line number.)

```
100 open "zzzzzz.zzz" for output as #1
110 zf$ = environ$("fgnd"): zb$ = environ$("bgnd")
120 zz$ = zf$: gosub 150: fgnd$ = zz$
130 zz$ = zb$: gosub 150: bgnd$ = right$(str$(val(zz$) + 10),2)
140 print #1,chr$(27)+"["+fgnd$+";"+bgnd$+"m";: close: system
150 zzz$ = "30black31red32green33yellow34blue35magenta36cyan37white"
160 zzz$ = zzz$ +
  "30black31red32green33yellow34blue35magenta36cyan37white"
170 zz = instr(zzz$, zz$): if zz <> 0 then zz$ = mid$(zzz$, zz - 2, 2)
180 if zz = 0 then zz$ = "": return else return
```

The third element you need is a short batch file to invoke BASIC and COLORS.BAS and feed the colors you enter to the program. Substitute GWBASIC COLORS for the QBasic line if you're using versions of DOS earlier than 5.0.

```
set fgnd=%1
set bgnd=%2
qbasic /run colors.bas
type zzzzzz.zzz
del zzzzzz.zzz
cls
```

CONTINUED ON PAGE 222

PC Contact

HOW TO LOG ON

Follow these steps to log on to PC/Contact. For current CompuServe subscribers, just type GO PCCONTACT to access the forum. Cost is based on CIS's fee of $12 per hour for 1,200/2,400 bps and $22.50 per hour for 9,600 bps.

1. Set the following parameters within your communications program: 7 data bits, even parity, 1 stop bit, and full duplex.
2. Call CompuServe's toll-free Customer Assistance Line at (800) 848-8990. A voice-response system will ask you if you want a local access number. Then you'll be asked to enter your phone number and the speed at which you want to access the system. CompuServe reads back the local number you'll use to access the service. The call is quick and free.

   Or, call CompuServe with your modem. Set up your modem and telecommunications package using 7 data bits, even parity, 1 stop bit, and full duplex and call (800) 346-3247. When the modem connects, press Enter. When you see the HOST NAME prompt, type in PHONES and then hit Enter. Then just follow the onscreen menus and note the access phone number for your area.
3. Dial the local access number with a modem. When you connect to the network, press Ctrl-C to get its attention.
4. At the HOST NAME prompt, type CIS (which is the acronym of the CompuServe Information Service).
5. At the USER ID prompt, enter 177000,5300.
6. At the PASSWORD prompt, enter PC/CONTACT.
7. At the ENTER AGREEMENT NUMBER prompt, type Z10DPCC1.
8. If you have trouble, call the Customer Assistance Line at (800) 848-8990. After you follow the above procedures, the CIS system will provide you with your own user ID—called a PPN—and a temporary password. You can then log on and begin to explore PC/Contact. In about two weeks, you'll receive a letter from CIS confirming your PPN and providing you with a new password. You should then change your password by typing GO PASSWORD at any CIS prompt.

.SYS and EMM386.EXE. It doesn't matter where in CONFIG.SYS the DOS directive appears.

DRIVEPARM Modifies the internal drive parameter tables DOS sets up for disk drives and other block devices. That's a lofty-sounding description, but in fact DRIVPARM is a cure for one of the most common ailments that afflicts DOS users: disk drives that think they're something other than what they are. For example, if you add a 3½-inch 720K floppy drive to your system and it formats disks to 360K (as if it were a 5¼-inch 360K drive), DRIVPARM can probably help. If the new drive is drive B:, add the statement

```
DRIVPARM=/D:1 /F:2
```

to your CONFIG.SYS and reboot. If that doesn't work, try adding a /I switch, as in

```
DRIVPARM=/D:1 /F:2 /I
```

The /I switch allows DRIVPARM to compensate for the lack of BIOS support for a specific drive type—what your DOS manual cryptically calls "electrically compatible" disk drives. ◩

Hot Tips

CONTINUED FROM PAGE 221

To change colors, all you need to do is type COLORS followed by a foreground and a background color at the DOS prompt. Legitimate colors are BLACK, RED, GREEN, YELLOW, BLUE, MAGENTA, CYAN, and WHITE.

WILLIAM BARDEN, JR.

A Prompt Reminder That the DOS Shell Is Active

Like 1-2-3, Windows, dBASE, and others, DOS's Shell lets you *shell out* temporarily, or leave the program to spend time at the DOS prompt without actually quitting the program. Also like the other programs, the Shell doesn't provide a constant reminder that it's active in the background.

Fortunately, it's easy to provide your own reminder. Create a batch file containing the following lines and save it as SHELLOUT.BAT in your batch directory or some other subdirectory mentioned in your AUTOEXEC.BAT's PATH statement.

```
@set prompt=[dos shell is active] $p$g
@command
```

Select the Main section's Command Prompt option, then choose File Properties for a dialog box entitled Program Item Properties. Replace the existing property with SHELLOUT.BAT for a reminder that the Shell is running built into the prompt.

MATTHEW LAKE

Search Any Hard Disk for Any File or Directory

The batch file FINDME.BAT, printed in November 1991's Hot Tips, works fine for searching partial filenames in unspecified drives. But if you want to search for full filenames and extensions, use wildcards, search a branch of the subdirectory tree, or search network drives, here's a better option. SEEKOUT.BAT uses ATTRIB to search and MORE to ensure that the files found will list one screen at a time.

```
@ECHO OFF
IF "%1"=="" GOTO MENU
ATTRIB %1 /S |MORE
GOTO STOP
:MENU
ECHO ON
ECHO You didn't enter a filename. Type SEEKOUT [filename] <Enter>
:STOP
```

Type SEEKOUT followed by the filename, or partial filename with wildcards, and SEEKOUT.BAT lists every occurrence in the current directory and its branches—and indicates whether the archive attribute is set by preceding the filename with an A. To search the whole disk, change to the root directory before issuing the command.

RONNY RICHARDSON

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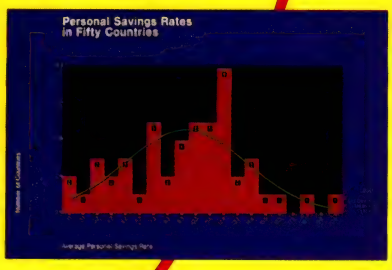

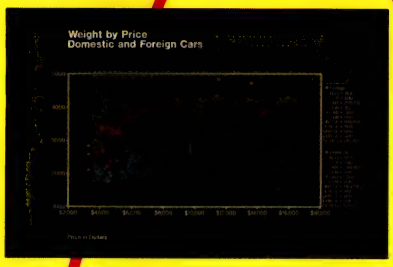

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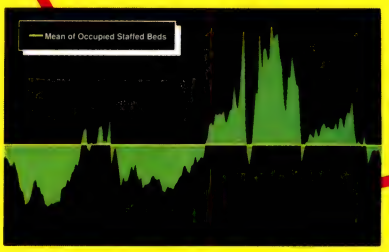

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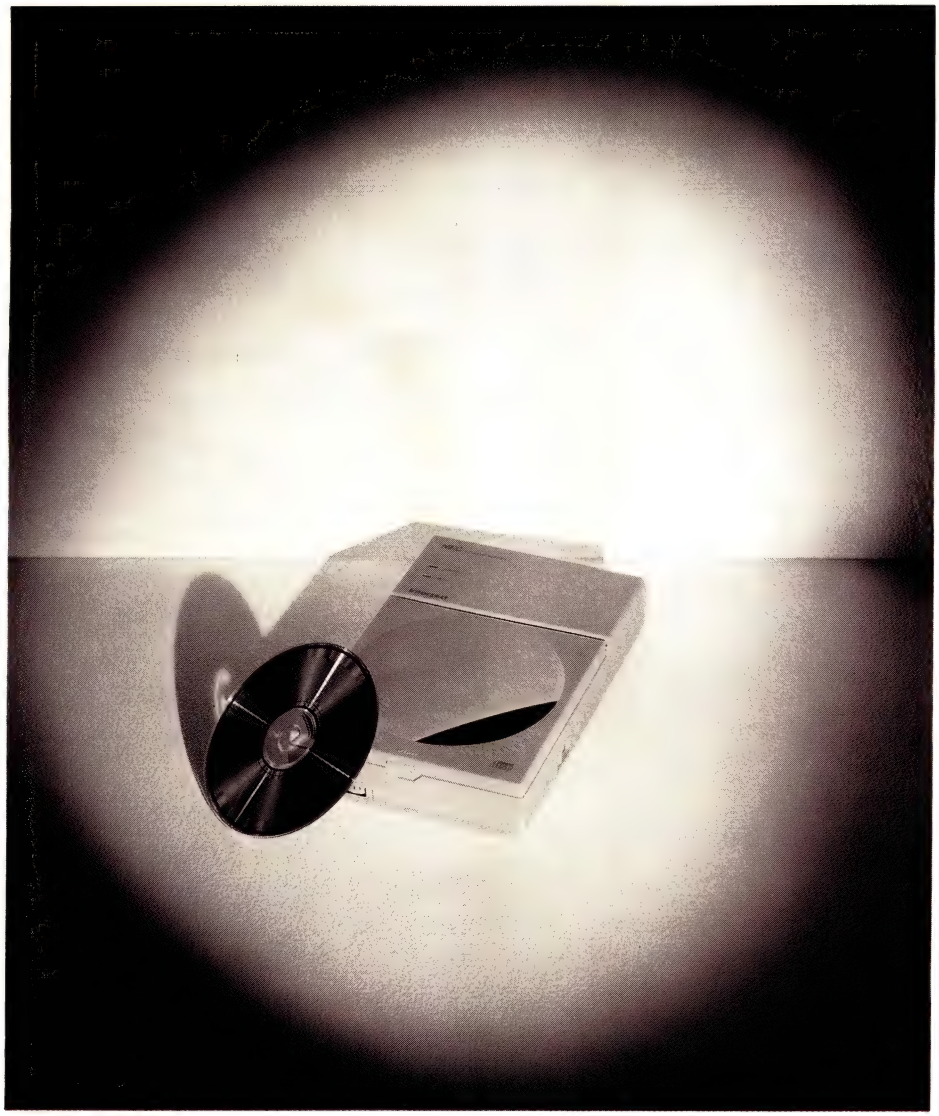

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A Beginner's Guide to Dynamic Data Exchange

GET WINDOWS TO EXCHANGE INFORMATION BETWEEN APPLICATIONS. **BY CRAIG STINSON**

WISH YOU COULD get someone else to exchange information between Windows apps? Call up dynamic data exchange (DDE). When it works, it's slicker than a rain-soaked L.A. freeway. But when it doesn't, it's enough to make you want to defenestrate your computer. DDE links are fragile, so you'll find it useful to understand how they are built, how they operate, and how to fix them when they go awry.

A DDE link (called a *conversation*) is formed by two Windows programs called the *server* and *client* applications. (The server application is the source of the data.) Both parties must support DDE, and these days, most general-purpose Windows programs do. Excel, WinWord, Ami Pro, WordPerfect for Windows, and 1-2-3 for Windows, for example, are all on the roster. The server application supplies data to the client and updates it either automatically or on demand. One common DDE scenario is a spreadsheet server application providing figures for a table in a client word processor.

Setting up the link is straightforward. Select the data in your server program and either press Ctrl-Ins or use the program's Edit Copy command. Then open the client document, put your cursor where you want the data to appear, and use the client program's Edit Paste Link command (sometimes a subset of the Paste Special menu option). That's all there is to it.

If the Paste Link command is unavailable (gray), you won't be able to establish a link. There are two possible causes. Either you've copied data from a program that isn't DDE-capable or the copied data came from a file that wasn't saved to disk. Many DDE server programs refuse to link data until it has been saved at least once.

Troubleshoot That Link

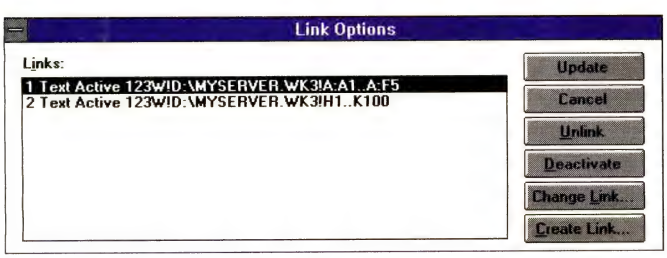
Once you've set up the link, you need to know about three potential problems: performance drag, inability to find the server's data, and inability to launch the server app. To help you cope with these hazards, your client program should provide you with a command called Edit Links, Link Options, Change Links, just plain Links, or something similar.

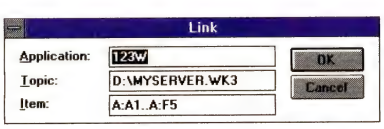
In Ami Pro, the command is called Link Options. It produces the dialog box shown in the larger screen below. Each DDE conversation in the current document appears in a list, and a set of command buttons lets you tinker with the links. (One button also gives you an alternative way to create a new link.)

Ami Pro, like most other DDE clients, creates automatic links by default links that are almost instantly (well, almost instantly) updated whenever the data from the server changes. In Ami Pro's terminology, these links are *active.* (An automatic link is also commonly called a *hotlink.*) If you don't need continuous update, you can improve the performance of your client application by changing the automatic link to an *inactive,* or manual, one. To do that in Ami Pro, select the link in the Link Options dialog, then click the Deactivate button. (In other programs, you might do the same thing by selecting a button labeled Manual.) When you want to update your client document thereafter, just select the link and click the Update button.

The information on the right-hand side of each item in Ami Pro's Link Options list tells you where the linked data originated. In the larger figure, the first link is to the range A1..F5 on sheet A of the 1-2-3 for Windows worksheet named MYSERVER.WK3. An alarm should ring in your head when you see a link defined this way. If you change the layout of your 1-2-3 worksheet, your table will reside in some other range and your Ami Pro document will be connected to a meaningless patch of cells. The solution is to name the 1-2-3 range, then tell Ami Pro to look for the named range, not the cell addresses. You can do that by clicking the Change Link button and replacing the contents of the box labeled Item with the name of your cell range (see the smaller screen at left). (You will need to make this adjustment in Ami Pro even if you name the cell range before doing your Copy and Paste Link.)

The principle here is that you should always inspect the link as it is recorded in the client application. Knowing what





The Link Options screen lists all DDE conversations in the client document. The screen at right is for modifying the first link.

Winapp of the Month

WINEZ 2.1

WinEZ 2.1 is a great little utility that simplifies Windows program launching and task switching. This $29.95 utility adds two icons to the title bar of every Windows app. One icon presents a list of all running programs, in effect replacing the Windows Task List. The other icon presents a hierarchical menu of all your Program Manager program items. With WinEZ, every program you use is only a menu selection away.

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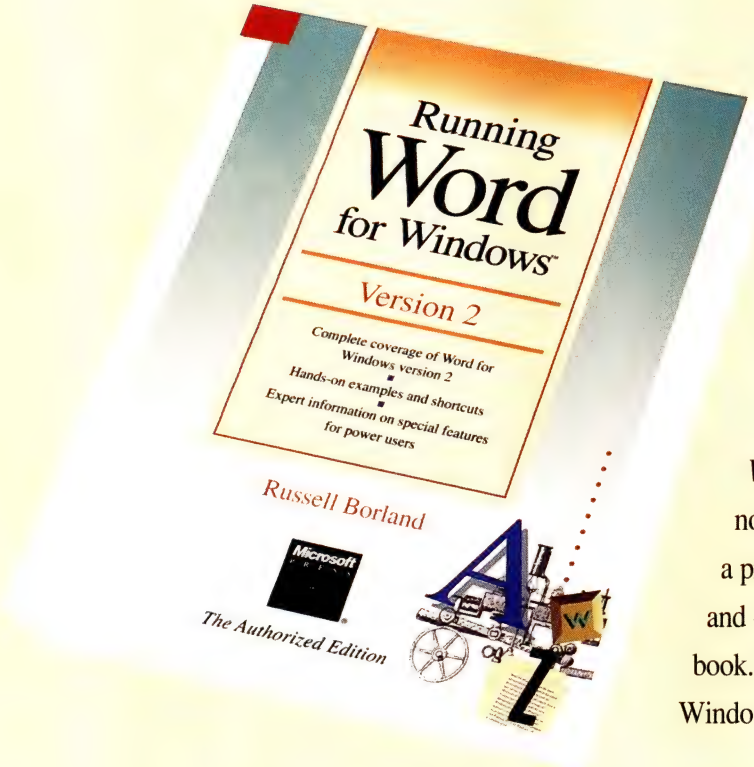

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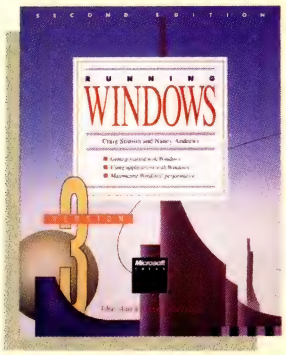

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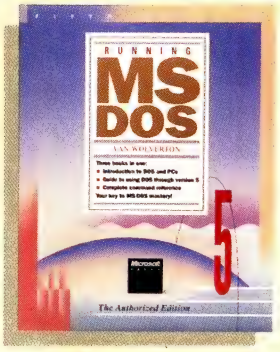

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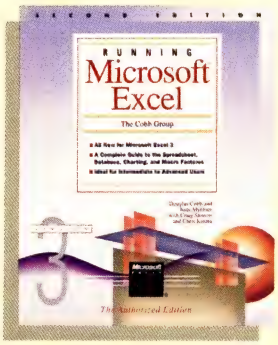

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you're linked to, and linking to named entities as opposed to fixed addresses when possible, will help you avoid irksome DDE errors.

You'll also need to use the Change Link button if you ever move or rename your server document. To fix the link in this case, change the contents of the Topic line. Some programs include a disk-browsing command to help you locate your migrant file.

Opening Server Applications

A more difficult problem sometimes arises when you try to refresh a DDE link to a server document that is not open. Your client program in that case should offer to launch the server application and document for you. Under some circumstances, you may accept the offer, look at an hourglass pointer awhile, and then receive a maddeningly uninformative failure message from the client application. If this happens, check the following:

Do you have enough memory and system resources to launch the server program? Switch to Program Manager and use the About command to check. If you're low on either memory or system resources, close a few programs and then try again.

Is the server program stored in a directory in your DOS path? If it's not, quit Windows, modify your AUTOEXEC.BAT file to change the path, reboot, or simply type AUTOEXEC at the DOS prompt, and then try again.

If memory is plentiful and the server is in the path, something else may be spoiling your fun. Excel 3.0, for example, will often refuse to launch via DDE if any add-in macros (XLA files) are stored in your XLSTART directory. But you won't find that information in the Excel manuals.

The bottom line is that you should test any DDE link thoroughly before you depend on it. And bear in mind that although DDE will hang around forever on the macro level because of the volume of code that's already been written to use it, you can expect object linking and embedding to supersede many DDE functions. ◪

Craig Stinson is a contributing editor of *PC/Computing* and the coauthor of *Running Windows* (Microsoft Press).

New QEMM-386 v6.

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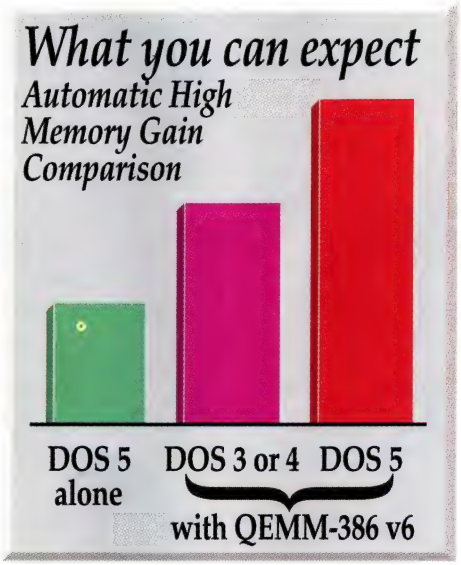

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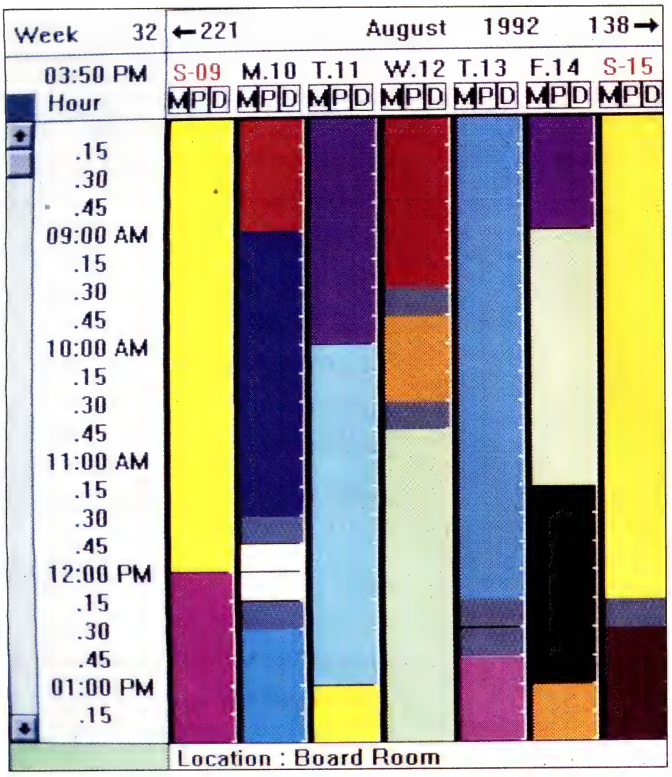

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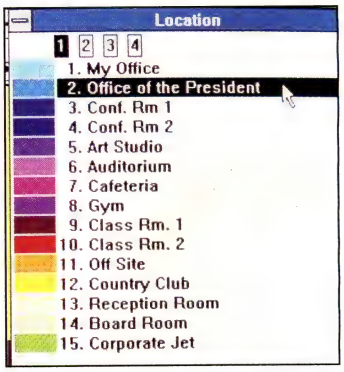

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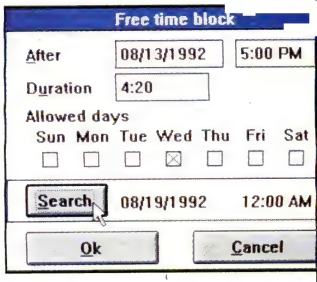

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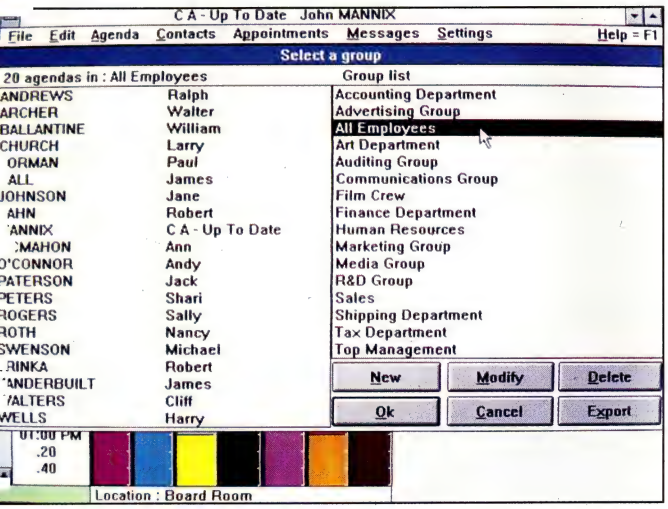

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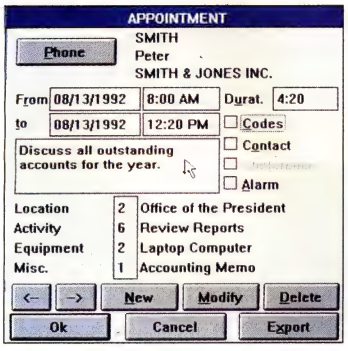

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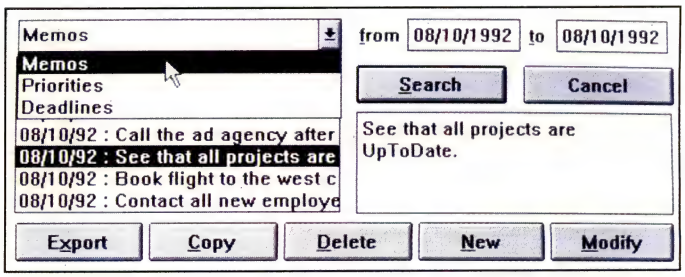

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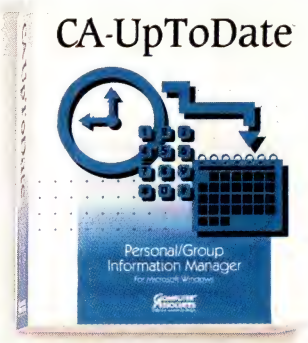

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1-2-3

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Do you have hidden columns in 1-2-3 Version 2.2 and need to look something up? Don't go through the cumbersome menu sequence /Worksheet Column Display. From anywhere in the worksheet during Ready mode, press the keyboard plus key. Hidden columns appear and you can move around the worksheet. When you're done, press Esc twice to conceal the columns again.

MARTY BEAVEN
NEWARK, NEW JERSEY

DO IT BY NUMBERS

Wish 1-2-3 would let you enter a date the way you want it displayed? Irritated when 1-2-3 won't accept a number when you type a dollar sign or commas? Say goodbye to all that with Release 3.0. Type in the number or date as it will look under the current cell format and you'll hear no beeps or complaints. 1-2-3 Release 3.0 also eases number cell formatting. Bring up the menu with the slash key and choose Range Format Other Automatic. Highlight and enter the range you wish to format. Enter a number with two decimal places, such as 12.34, into a cell in this range, and 1-2-3 automatically formats the cell with two fixed decimal points. Enter $13.45 and the cell is formatted as currency with two decimal places. Enter 15,645 and the cell is in comma format with no decimal places. Best of all, enter a date in the default format, and henceforth the cell is formatted as a date.

With the automatic format, a cell takes its cue from the format of the first number you enter. If you type a new number in the cell, the format remains the same even though the cell's contents have changed.

JUDY HOUSMAN
CAMBRIDGE, MASSACHUSETTS

MORE FILES ONSCREEN

If you store many 1-2-3 worksheet files in a single directory, the list of five files that you get from the /File Retrieve menu isn't adequate. You can expand the range by pressing F3 when you're prompted to retrieve a file. A full-screen list of up to 105 files appears, including the date, time, and size of the highlighted file. Navigate this listing with the standard cursor keys.

MATTHEW LAKE
ASSOCIATE EDITOR

QUATTRO PRO

RECLAIM DISK SPACE

If you're low on disk space, Quattro Pro can help you trim some fat. After looking through your directories and deleting old or duplicate files, purge the Bitstream font files (with the extension .FON) that Quattro Pro has created—don't worry, it will create more as you use them. Delete your Transcript log and backup log files (QUATTRO.LOG and QUATTRO.BAK).

Pro Tips: Spreadsheets

WEIGHTING QUESTIONNAIRE RESPONSES:

I USE 1-2-3 TO COLLATE THE ANSWERS TO QUESTIONNAIRES. RESPONDENTS MUST SELECT 1, 2, 3, 4, OR 5 IN RESPONSE TO EACH QUESTION, BUT SOME QUESTIONS CARRY A GREATER DEGREE OF IMPORTANCE THAN OTHERS. SO FOR THE FIRST QUESTION, THE ANSWER 1 MIGHT TRANSLATE TO 3.5, WHILE ON ANOTHER QUESTION IT WOULD MEAN 4.6. DO I NEED TO CREATE A LOOKUP TABLE FOR EACH OF THE 50 QUESTIONS ON THE QUESTIONNAIRE?

ERIC AYERS
FREEVILLE, NEW YORK

You don't need lookup tables to analyze your questionnaire; there are several other solutions to your problem. The simplest, perhaps, is to use the CHOOSE function, which uses an index value to select an entry from a list. In 1-2-3 and Quattro Pro, the function's syntax is @CHOOSE(*index_value,item1,item1,item3 . . .*)

Excel's syntax omits the @ sign in front of the function name. The function's INDEX_VALUE argument identifies which item arguments to return as its result. When the index value is 0 in 1-2-3 and Quattro Pro, the function's result is item1. When the index value is 1, the function's result is item2, and so on. Excel interprets the index value more intuitively: An index of 1 returns the item1 result, an index of 2 returns item2, and so on.

Here's how to apply the CHOOSE function to your problem. Columns A and B of this sample worksheet identify the questions and responses on the questionnaire.

	A	B	C
1	Question 1	2	4.1
2	Question 2	5	3.1
3	Question 3	1	3.8

Column C contains CHOOSE formulas with lists of weightings. In 1-2-3 and Quattro Pro, the formula in cell C1 is @CHOOSE(B1,3.3,4.1,2,4.1,3.3). In Excel, the formula is =CHOOSE(B1,3.3,4.1,2,4.1,3.3). Each successive formula in column C refers to the adjacent cell of column B, each with its own weighting in item arguments.

The CHOOSE function can return strings as well as numbers. The formula @CHOOSE(B2,"poor","average","good") returns the string *poor* when the value of cell B2 is 0. It returns *average* when B2 contains 1 and *good* when B2 contains 2.

You can even mix strings with numbers among the ITEM arguments. The formula =CHOOSE(B3,"none",50,100) in Excel returns the string *none* when B3's value is 1. It returns the value 50 when B3 equals 2, and it returns 100 when B3 is 3.

Because you must write a unique CHOOSE formula for each question on your questionnaire, this approach isn't much quicker than using lookup tables. On the other hand, a CHOOSE function uses only one cell to return the weight for each question. Lookup tables would require six cells.

Daniel Gasteiger

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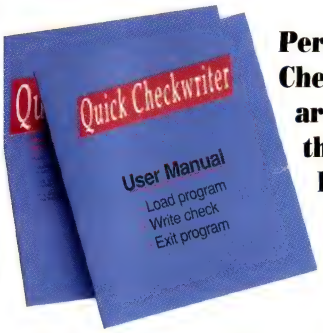

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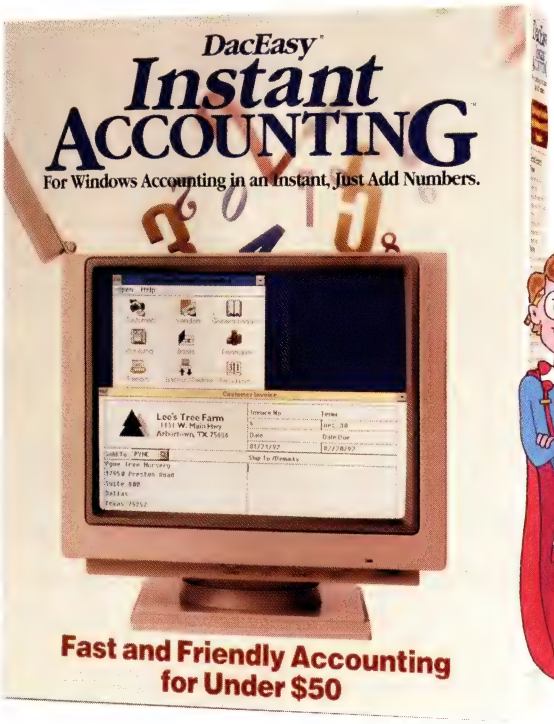

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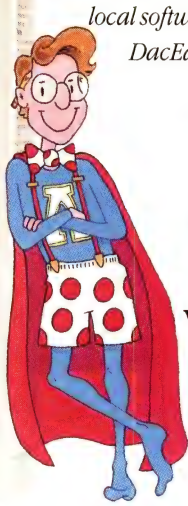

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Circle 162 on reader service card.

Decrease the Transcript Max History Length setting to create smaller command history files. If you feel confident, turn it off altogether by setting the history length to zero. Compress your worksheet files as you save them by adding the extension to the filename (.WQ!).

JAN SMITH
STAFF WRITER

LOAD A FAKE WORK SPACE

Defining a work space of several spreadsheets as your Autoload file under Startup options cuts to the chase. If, however, you often need to work on only one worksheet that belongs to a work space, waiting for all the others to load may fray your patience. One solution: Rather than designating your work space as the Autoload file, designate the most frequently used worksheet from the group. Then create bogus links to empty cells in the other spreadsheets. When your spreadsheet loads, you'll be prompted to update the links. If you need to work on all of the files, select Load Supporting. Otherwise, select None.

C. O. STEENBURGH, JR.
LEXINGTON, VIRGINIA

RESTORE THE MOUSE CURSOR

Some memory-resident programs can interfere with Quattro Pro's mouse cursor. If the cursor disappears, you can restore it without closing and restarting the program. Select /File Utilities DOS Shell to shell out to DOS. When the DOS prompt appears onscreen, type EXIT and then press Enter. When you return to Quattro Pro, the mouse cursor is restored.

CHARLES M. OLSEN
DICKINSON, TEXAS

MICROSOFT EXCEL

BANISH STARTUP SHEETS

Do you use the blank worksheet that Excel loads every time you start the program? If you don't, Sheet1 is just a nuisance that you have to close before you can load the sheet you want to work on: Try this undocumented trick. Click on the Excel icon in the Program Manager, select File Prop-

/// Pro Tips: Word Processing ///

TWELVE TIPS FOR MAKING READABLE DOCUMENT

I HAVE AN ARSENAL OF GREAT-LOOKING TYPEFACES AND A PRINTER, BUT I CAN'T MAKE A HALFWAY DECENT-LOOKING MEMO OR REPORT. I'M STICKING WITH COURIER BECAUSE I CAN'T GO WRONG WITH IT, BUT THIS SEEMS LIKE A WASTE OF EXPENSIVE RESOURCES. WHAT POINTERS CAN YOU GIVE ME?

STEWART STEVENS
RAINSBURG, PENNSYLVANIA

Laser printers introduced many options to word processing, not the least of which involved deciding how to make proportionally spaced fonts most readable. Any laser printer will produce legible text, but you're responsible for making the text both pleasant and easy to read. Here are some general rules to help.

1. Use a sans serif type such as Helvetica only for pull quotes, captions, and headlines. People read sans serif type slower than serif type.

2. The size of body text greatly affects a document's readability. The best size for body text is 9 to 12 points. However, some typefaces look larger than others of the same size because their *x-height*, the height of a lowercase *x*, is higher.

3. *Leading* (pronounced ledding), or line spacing, also affects readability. Text with too little leading looks dense; too much leading is equally unappealing. WordPerfect sets leading at 2 points more than the size of the type. If this looks too dense, override the default setting with Leading Adjustment.

Type size (in points)	8	10	11	12	14
Minimum leading (in points)	8	10	12	14	17
Maximum leading (in points)	10	14	15	18	22

4. Very long and very short lines reduce readability. To strike a happy medium, set body text in lines no longer than the width (in picas) of the type size (in points). Under no circumstances should 10-point type be set in lines wider than 20 picas—the best length is considerably shorter.

Type size (in points)	8	10	11	12	14	18
Minimum length (in picas)	9	13	13	14	18	24
Maximum length (in picas)	13	16	18	21	24	30

5. If you follow these recommendations and text still looks dense, you may be using a dark typeface. Set a few paragraphs in another typeface and compare them.

6. Though there's little difference in the readability of justified and ragged-right body text, slow readers find justified text harder to read.

7. Overly ragged line endings also slow the reader. To avoid this problem, hyphenate ragged-right text. It's a good idea, however, to limit hyphenation: No more than two hyphens in a row, and no more than three hyphens per paragraph.

8. People read italic print 20 words per minute slower than normal text. Limit italic type to captions, foreign words, titles of publications, and other short phrases.

9. Boldface and underlining don't belong in proportionally spaced body text. Use bold in headlines, and never use underlining, which was invented for typewriters that couldn't print italics.

10. Avoid large blocks of capital letters. If you must set type in caps, use large and small caps.

11. Reversed text (white text on a black background) lowers reading comprehension by 30 percent. For optimal readability, use reversed type only with a 100 percent black background.

12. Use no more than two typefaces in a document. Mixing typefaces harmoniously takes a good eye and experience. Similar faces generally clash, while dissimilar ones such as Times Roman and Helvetica work well together.

George Beinhorn

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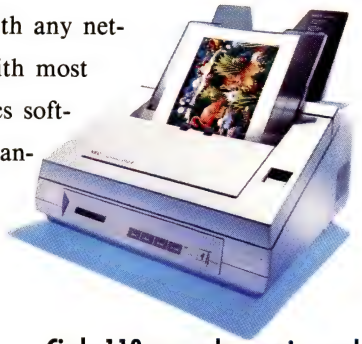

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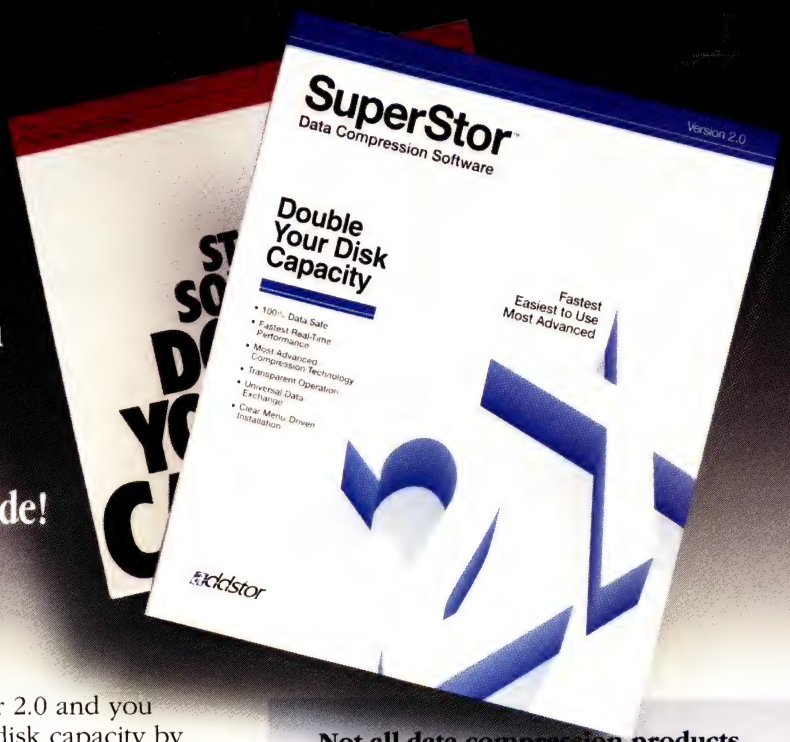

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Real-time on the fly data compression doesn't slow down your PC!	YES	YES
Universal Data Exchange allows compressed floppies or removable drives to be read and saved by any PC!	YES	NO
Fully integrated menu-driven software program offers ease of installation and operation!	YES	NO
Advanced Compression Utility Tool Kit scans, checks, and repairs compressed data!	YES	NO
Advanced Disk Optimization Utility defragments or consolidates compressed data for optimal disk performance!	YES	NO
Highest compression ratio of any data compression software (up to 25% greater with version 2.0!).	YES	NO
Automatically updates CONFIG.SYS on physical partition to further enhance transparent operation!	YES	NO
Dynamically adjusts drive capacity to fit more data on compressed disks with less effort!	YES	NO
Performance enhancing Disk Cache results in faster system performance!	YES	YES
Device driver easily loads high, maximizing conventional memory for RAM-intensive applications!	YES	YES

addstor

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Circle 269 on reader service card.

erties, and insert the command-line parameter /E after the reference to EXCEL.EXE. Now Excel will load without Sheet1.

DALE LEWALLEN
TECHNICAL EDITOR

DO THE SPLITS

If you often use lengthy worksheets, split the window so you can see column and row titles *and* data no matter where you scroll. Click on the worksheet window's top-left corner and choose Split from the bottom of the menu. Horizontal and vertical gray lines appear, intersecting at the cursor. Move the cursor to where you want the split to occur (at the intersection of the column and row title cells, for instance). If you make a mistake, reselect the Split command and try again.

CHRISTINE GRECH
ASSISTANT EDITOR

WORDPERFECT

EMPHASIZE LINE NUMBERS

Make WordPerfect 5.0 and 5.1 line numbers stand out by setting them in a font different from the main text. Go to the top of your document, press Ctrl-F8, pick Base font, and select a font for the line numbers. Next, press Shift-F8 and select Line, Line Numbering, Yes. In the line-numbering menu, select your options, and press F7 to exit. Finally, press Ctrl-F8 Base font and select another font for your main text.

HOWARD WELLS
LONG BEACH, CALIFORNIA

SPACE-SAVING FILES

You're saving WordPerfect 5.1 files to a floppy disk, and you run out of space. Don't despair. You can reduce your file sizes by more than half in such an emergency. Simply save your files in WordPerfect 4.2 format. Top do so, press Ctrl-F5, select option 3 (Save as), and then pick number 3 (WordPerfect 4.2).

Fifty percent reductions in file size aren't uncommon. One caveat: Don't use this technique with graphics files.

GENE H. ROOS
NEW ORLEANS, LOUISIANA

WORD FOR WINDOWS

LOOK, NO DOCUMENT1

Want to eliminate the opening document in WinWord? Click on the Word for Windows icon in the Program Manager, select File Properties, and insert the command-line parameter /N after the reference to WINWORD-.EXE. Now WinWord will load without the default Document1.

DALE LEWALLEN
TECHNICAL EDITOR

Get A Life

Circle 131 on reader service card.

REMOVE FORMATTING

If something's desperately wrong with the formatting of a paragraph or document, clear it completely and start from scratch. Cut the text, paste it into the Notepad, and cut and paste it back into WinWord. All formatting commands are removed and you can start over with a clean slate.

JAMES ALLEN
NEW CASTLE, DELAWARE

WORDSTAR

PROGRAMMING-FREE MACRO

Shorthand Macros are useful for entering long or complicated names that will appear frequently in your document, but here's a trick that requires no programming. Enter an unusual and easy-to-type string such as @@@@ instead of the word or phrase. When you've finished the document, press Ctrl-Q-A to call up WordStar's Find and Replace and replace each instance of @@@@ with the tough-to-type text.

EVERETT J. TURNAGE
MARTINEZ, GEORGIA

ON YOUR BLOCKS . . .

The WordStar manual says to remove blocking by pressing Ctrl-K-B to remove the starting block, then moving to the end of the block with Ctrl-Q-K, and finally pressing Ctrl-K-K to remove the end block. Instead of going to the end of the block, bring it to you by typing Ctrl-K-K from wherever you are, and Ctrl-K-K again to remove it.

DONALD W. MOFFAT
CORVALLIS, OREGON

PARADOX

MULTIPLE PARADOX SESSIONS

When you run Paradox on a network, the network operating system ensures that you can share program and data files with other users. But Paradox may also need to share files with a standalone PC. If you use Paradox along with Windows, Desqview, add-in programs such as KMemo, or applications developed in-house that use the RUN command, you need to prepare Paradox to share.

First, ensure that your AUTOEXEC.BAT FILE invokes DOS's SHARE command—or that you always load Paradox with a batch file that contains the word *share* on its own line before it loads Paradox. Next, remember to load Paradox with the -SHARE command-line option. When you start the program with the line PARADOX -SHARE, it will write a PARADOX.NET file in your hard disk's root directory and make an entry in it for each session or program that runs Paradox.

STEVE KERWOOD
SAN JOSE, CALIFORNIA

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INSENSITIVE SEARCHES

When Paradox searches for values in a table, the query is usually case sensitive; enter *Bob* as your selection criterion, and you won't get records with the value BOB in the Answer table. The same is true when Paradox is looking for linking values in a query, form, or report. Wildcards are the only solution. Set up your query with the selection criterion Bob.. and Paradox will find all records with Bob, BOB, and bob. When you use wildcards, indexed queries won't search as fast as when you use specific criteria.

STEVE KERWOOD
SAN JOSE, CALIFORNIA

DBASE

RANGE FINDER

Many dBASE texts and tutorials use the following construction in sample menu programs to suspend execution until you press a key.

```
I = Ø
DO WHILE I = Ø
I = INKEY ()
ENDDO
```

This technique uses the function CHR(*I*)—which converts the numeric value of the memory variable *I* to ASCII code—to determine which key was pressed. However, there's a drawback. CHR( ) will accept only arguments from 0 to 255. Pressing the F2 to F10 keys produces values of -1 through -9 respectively—all out of CHR( )'s range.

Here are two simple solutions to this problem. The first is to use the SET FUNCTION command to assign values within CHR( )'s range to the F2 through F10 keys (SET FUNCTION 2 TO CHR (0) for example). The second is to take the easy route by simply adding the following line after I = INKEY( ):

```
I - IIF(I < Ø .OR. I > 255, 0, I)
```

ROGER SAUER
FAIRFIELD, CALIFORNIA

DBASE TO DOS

Issue a DOS command from the dBASE dot prompt by preceding the command with an exclamation point (!). This saves keystrokes over the usual RUN DIR, RUN COPY, and so on. It also beats issuing a RUN COMMAND line at the dot prompt to shell out to DOS—which loads a second copy of COMMAND.COM and wastes memory. If you need more than a quick !DIR or !COPY *.* A:, try calling up programs with the same technique. For example, !\WP51\WP calls up WordPerfect without changing the default directory.

CLARENCE CALKINS
RIGBY, IDAHO

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Circle 176 on reader service card.

PROCEDURE FILES

Save disk space and processing time by storing procedures in procedure files. You can store up to 32 procedures per file for use in any dBASE program. Just insert a line in your program to call the procedure file, and insert DO commands to retrieve the procedure.

For example, save the following lines of code in a procedure file called SAMPLE.PRG:

```
PROCEDURE First
?"Procedure number 1."
RETURN
PROCEDURE Second
?"Procedure number 2."
RETURN
```

Then issue the following command from your program:

```
SET PROCEDURE TO
sample.prg
DO First
DO Second
```

TECHNICAL SUPPORT STAFF
ASHTON-TATE

CROSSTALK

RECAPTURE DATA

Don't call back an online service if you forget to use the CAPTURE command to save the data you're viewing. Crosstalk XVI holds up to 4K of data in a buffer. To recapture information, type CA < at the command prompt and press Enter. You can even specify the exact number of lines you want to see by adding a number between 1 and 96 after the command—for example, CA < 20.

JACK NIMERSHEIM
VEVAY, INDIANA

NORTON UTILITIES

A PC PHYSICAL

Give your PC a physical once a week at bootup with a few lines in your AUTOEXEC.BAT file and Norton's Disk Doctor—but also give yourself the option to skip it.

First, open CONFIG.SYS and check that the SHELL command refers to Norton's shell NDOS instead of COMMAND.COM. The line should read something like this:

```
shell = c:\nu\ndos.com/p
```

Next, open AUTOEXEC.BAT and make sure the Norton subdirectory is in the PATH line. Now enter these lines in your AUTOEXEC.BAT file:

```
iff "% dow"=="Sun" then
ndd c:/c
endiff
```

Substitute any other day of the week for *Sun* if you prefer, and feel

Pro Tips: Databases

PHONE BOOK LISTINGS FROM PARADOX

HOW CAN I PRINT A LIST OF NAMES IN TWO COLUMNS, WITH THE NAMES RUNNING ALPHABETICALLY DOWN THE COLUMNS PHONE-BOOK STYLE? A TWO-COLUMN-WIDE LIST THAT RUNS ALPHABETICALLY ACROSS A PAGE IS NO GOOD.

SUSAN WILLIAMS
SAN FRANCISCO, CALIFORNIA

In Paradox, you can create free-form reports containing side-by-side labels, but Paradox moves through the database sequentially, creating labels alphabetized from left to right instead of from top to bottom. However, with a PAL script and an extra database field, you can create a code that Paradox can sort and use to print the names in the proper order.

Let's say you have a Paradox database, CUSTOMER, with a field NAME. You want to print a report with 60 lines on a page and with two columns of alphabetized names. Use Modify Restructure to add a numeric field called SORTCODE to the database. Sort CUSTOMER on the field NAME with Modify Sort to sort CUSTOMER in the order that you need for printing.

Use the following script to create SORTCODE. The script places sequential odd numbers in the first 60 records of the file, sequential even numbers in the next 60, odd numbers in the next 60, and so on. The script adds the page number multiplied by 1,000 to the code so that the records stay on the proper pages when sorted.

When the variable RECS (the number of records left to print) drops below 120 lines (the number of names on a page), the script splits the remaining records evenly between the two columns. You'll see the following results in SORTCODE:

```
Record 1 – 1001
Record 2 – 1003
.
.
Record 61 – 1002
Record 62 – 1004
```

SORTCODE

```
VIEW "Customer"
EDIT "Customer"
page=1
lines=1
ttllines=60*2
recs=NRECORDS("Customer")
SCAN
  [Sortcode]=page*1000+lines
  lines=lines+2
   IF lines=ttllines+1 OR lines>recs
      THEN lines=2
   ENDIF
   IF lines=ttllines+2
      THEN page=page+1
      lines=1
      recs=recs-ttllines
   ENDIF
ENDSCAN
DO_IT!
```

Sort customer by sortcode and create a free-form report specification. Add report headings, reduce the body of the report to one line, and place the name field on that line. Change the report length to 60 plus the number of lines in your header and footer. To force Paradox to print two names side by side, select Setting Labels Yes and choose Setting PageLayout to change the page width to 40 characters and the right margin to 80.

When you print the report, Paradox prints the name in the first record (record one in the original sort) in the left column. The page width of 40 forces Paradox to print the next record (record 61 in the original sort) in the right-hand column. Change the variable TTLLINES if you want to print more than one line per record.

Mike Falkner

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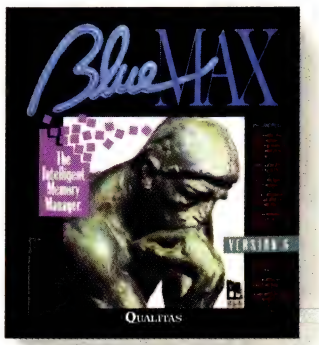

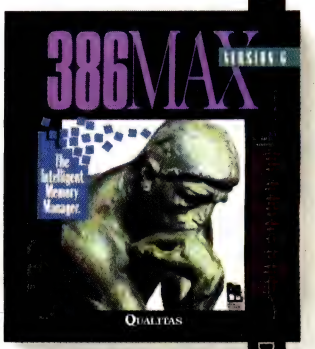

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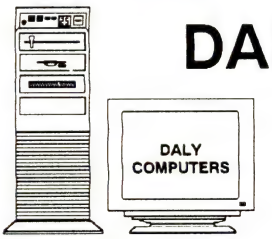

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Software Secrets

free to change the reference to drive C: to another drive or add additional drive letters. Then reboot so the changes will take effect.

Next time you boot up on the day you've specified, Disk Doctor will execute. If you've assigned a password to the utility (which is a good precaution to take), the Password screen will appear. Either enter your password to continue the checkup or hit Enter followed by any key to quit.

NANCY M. BOWEN
WRENTHAM, MASSACHUSETTS

WINDOWS

SCREEN CAPTURE 101

Need to paste a screen image into a Windows application? Just press PrintScreen. Your cursor will vanish for a while as the screen image copies to the Clipboard. You can then insert it into any application by pressing Shift-Ins or selecting Edit Paste. To copy just the active window, press Alt-PrintScreen.

REBECCA PATTON
EDITORIAL ASSISTANT

HARVARD GRAPHICS

SNEAK PEEKS AT 1-2-3

Have trouble remembering Lotus ranges when you're graphing spreadsheet data in Harvard Graphics? There's an easy way to obtain a list of range names. After you've defined your chart file in Harvard Graphics, select Import and then Import Lotus Data. Type in the Lotus spreadsheet file location, hit return, and place the cursor in the Data Range column. Press F6 to get a list of the worksheet's range.

KATHLEEN RICHARDS
ASSISTANT EDITOR

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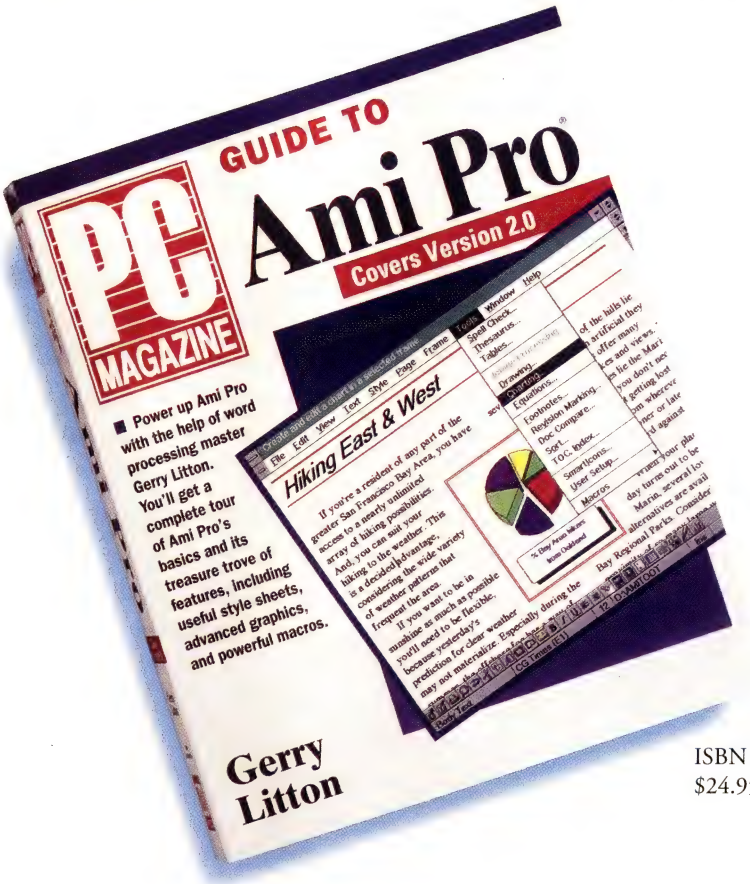

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TIPS AND TECHNIQUES TO BRING OUT THE BEST PERFORMANCE IN YOUR PC AND PERIPHERALS

PRINTERS

SENDING CONTROL CODES

Most applications tidy up a printer's settings after they've finished generating hard copy, but there are a few frustrating exceptions. There's hardly anything more annoying than picking up a multiple-page memo from the network LaserJet and finding it's been printed in 5-point LinePrinter in landscape mode.

Save yourself the hassle. Send printer control codes from your PC to reset your LaserJet's font selection, paper orientation, and other settings. There are more than 100 control codes listed in the LaserJet manual, each of which performs a different function. All codes start with the ASCII Escape character, followed by the desired instruction. You generate the Escape character (shown below as a left-pointing arrow) in different ways in different text processors.

In EDLIN or COPY CON, type Ctrl-V. In DOS 5.0's Edit, press Ctrl-P followed by Esc. In other word processors, try Alt-027. The following batch file, called LAND.BAT, sets the LaserJet to print in landscape mode. Retaining the combination of uppercase and lowercase letters shown here is crucial.

```
@echo off
cls
Echo Printer Now In Landscape
   Mode.
Echo ←[&l10 > lpt1:
```

The ECHO statement on the fourth line sends an *ESC*, a lowercase *l*, a *1*, and an uppercase *O* to LPT1. Simply change the batch file's port assignment if your printer's not hooked up to LPT1.

Use the same method in applications (such as 1-2-3) that accept printer setup strings to add character formatting. For example, to change the *stroke weight*, or boldness, of a word within a document, enclose it in the following setup strings:

←[(s3B *word* ←[(s-3B

The first string (s3B) inserts a heavy stroke weight and the second (s-3B) reverts to the original setting. For additional information on printer control codes, refer to your printer documentation.

STEVE SACCO
AGOURA HILLS, CALIFORNIA

MONITORS

INCREASED LIFE EXPECTANCY

Like all electronic goods, your monitor won't last forever. However, you can prolong its life by taking a few simple precautions.

First of all, you should keep all the ventilation holes and slots free and clear. Never place paper or anything else on top of the display. Poorly ventilated monitors become hot, which

Hardware Checklist

MODEMS RUN RED LIGHTS

The lights on the front panel of your modem tell you a lot if you know how to decode them. Is it sending or receiving data? Is it properly connected to your PC? When you first turn your modem on, the HS, TR, and MR lights should be illuminated, and under most circumstances, they should stay that way. Here's what the lights mean and how to troubleshoot.

HS—HIGH SPEED. Your modem is operating at its highest transmission rate—1,200, 2,400, or 9,600 bps—unless this light (and none of the others) goes off, which means you're transmitting at a slower speed.

TR—TERMINAL READY. This light indicates that your modem and PC are connected and ready to swap instructions. The PC sends a Data Terminal Ready signal from the communications software to the modem, which tells the modem that the software is loaded. If it's not on, turn off the power, check connections, and try again.

MR—MODEM READY. If this light is not on when you turn on your modem, check the power adapter connection. In the first few seconds after you turn the power on, your modem runs a check routine, during which the MR light may blink for a while, then glow steadily. If the MR light is not lit after this routine, turn off your modem and power up again.

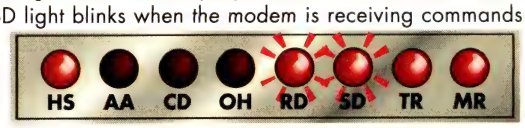
AA—AUTO-ANSWER. If you intend to host an incoming modem call, enable Auto-Answer. Not all communications programs illuminate the AA light, even though they enable the modem's first S register, S0, which controls the Auto-Answer facility. To be sure your modem will pick up an incoming call after one ring, enter terminal mode, type in ATS0=1, and press Enter. This should turn on the light.

CD—CARRIER DETECT. This light shines when your modem connects with another system. This usually takes about 15 seconds after first dialing out. Use this light to check that you're still connected if there's a pause in your online activity.

OH—OFF-HOOK. This light is on whenever the modem takes control of the phone line—the equivalent of taking a handset off the hook of a telephone.

RD—RECEIVE DATA. This light blinks when the modem is receiving data. When you're downloading a file, this light is often the only sign that something is happening.

SD—SEND DATA. The SD light blinks when the modem is receiving commands from its host PC or transmitting data to another modem.



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eventually deteriorates the insulation of the components and circuits. Excessive heat can also alter the rated values of some components, increase the likelihood of current leakage, and cause outright failure. If you notice dirt accumulating on the openings, vacuum them clean.

Leave your display on as much as possible: It's better not to turn your display on and off more than once or twice a day. If possible, leave it on permanently, but use a screen blanker or turn the brightness way down. The cost of electricity for operating a display is small, about 16 cents per day for a typical display left on continuously (at 10 cents per kilowatt hour), but the benefits are legion.

Each time you turn your display on or off, voltage instabilities and power surges may stress some components. Temperature cycles inside individual components and the entire piece of equipment may prematurely age some components. In some cases, poor-quality electrical connections may fail or become intermittent.

Another important reason to leave your display on is that most CRT displays will experience their greatest drift when first turned on. Many monitors take up to an hour to stabilize. During this period, image centering, black level, focus, and screen brightness can vary greatly, affecting readability and user comfort.

If you do leave your color display on continuously, make sure that you degauss it periodically to stave off a loss in color purity. If you have a degaussing button, be sure to press it at least once a week. Otherwise, turn your display off for at least half an hour from time to time. When you start up the monitor again, it will degauss itself automatically.

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SYSTEMS

WATCH THOSE SLOTS

Having problems configuring that new hard disk controller or 16-bit VGA board? Make sure you haven't plugged the 16-bit board into an 8-bit slot. It's easy to do, especially in slimline PCs that mount the slots out of easy sight. The board's second edge connector can slip over the edge of an 8-bit slot without being noticed, and install routines rarely pick up the problem.

MATTHEW LAKE
ASSOCIATE EDITOR

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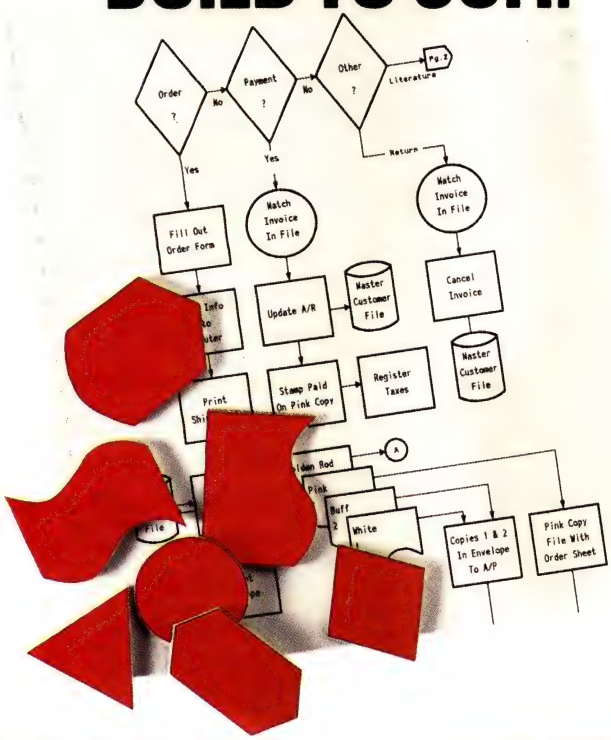

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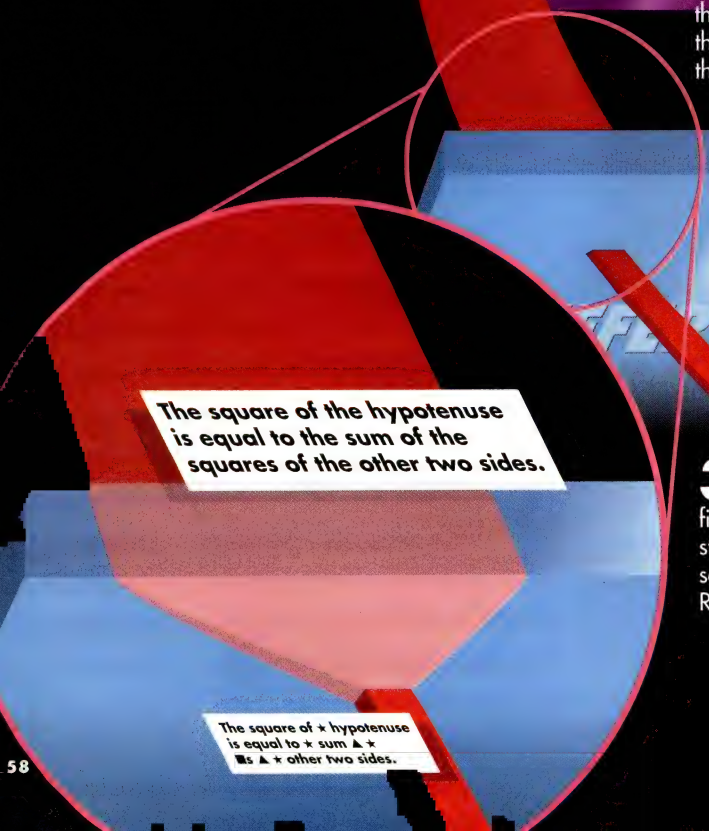
Lossless Data Compression

FILE COMPRESSION SOFTWARE TRANSPARENTLY COMPRESSES AND DECOMPRESSES DATA EVERY TIME YOU SAVE, COPY, OR MOVE A FILE. **BY GINA SMITH**

1 Once you've loaded a data compression device driver into memory, it intercepts data going to and from the hard drive or floppy disk. When you invoke your application's File Save command, data compression utilities based on the 1977 Lempel-Ziv algorithm (and that accounts for most of them) channel the data into a 2,048-byte history buffer in your PC's RAM. Some hardware-assisted compression systems contain their own RAM for this purpose.

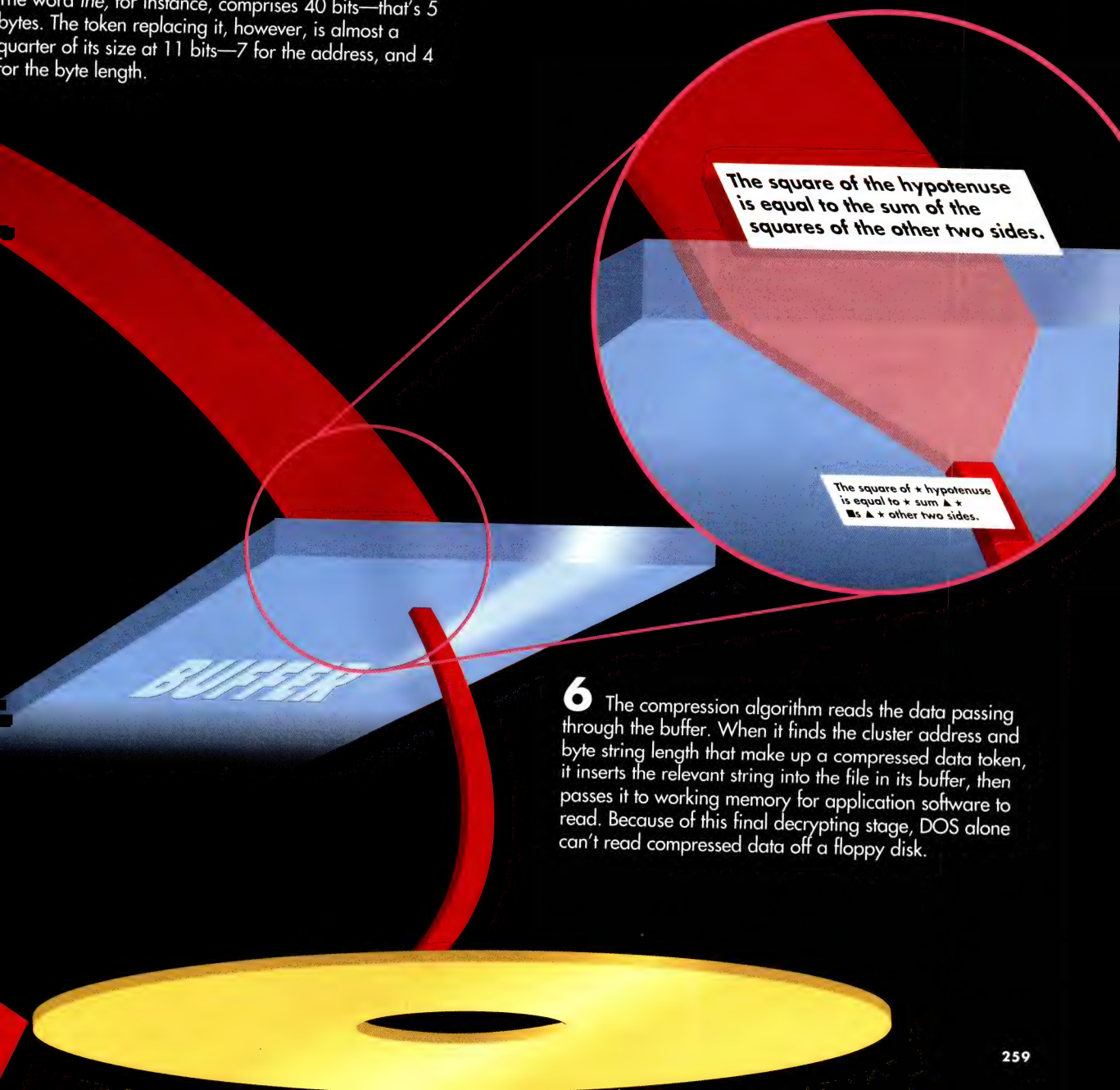
2 As the buffer fills up with bytes of data, the L-Z device driver scans the succession of binary information for matching strings of characters. It sends the first instances of characters straight to DOS to write to disk. The first time the word *the* goes through, for instance, the compression utility will send through the five characters that make up the string (the opening space, three letters, and then the final space).



3 As with a regular File Save procedure, DOS checks your file allocation table (FAT) and finds the address of a cluster to store the data. DOS translates the FAT address into logical sector numbers that the ROM BIOS will recognize, and the ROM BIOS begins to write the data to the disk.

4 When the compression device driver sees a repeated instance of a character string, it creates a two-part code to send to the disk in its place. This code (also called a *token*) has two parts: The first indicates the byte offset between this instance of the word and the first instance—a kind of "pointer"; the second indicates the length of the byte string. The token replacing the word is much shorter than the word itself. The word *the,* for instance, comprises 40 bits—that's 5 bytes. The token replacing it, however, is almost a quarter of its size at 11 bits—7 for the address, and 4 for the byte length.

5 When you retrieve a compressed file, DOS initially makes most of the calls. First, it checks the FAT address of the clusters that make up the file and translates the address into a logical sector number that the ROM BIOS can recognize. Then DOS calls the compressing device driver. Instead of going straight into working memory as usual, the file first passes through the compression driver's buffer.



6 The compression algorithm reads the data passing through the buffer. When it finds the cluster address and byte string length that make up a compressed data token, it inserts the relevant string into the file in its buffer, then passes it to working memory for application software to read. Because of this final decrypting stage, DOS alone can't read compressed data off a floppy disk.

AUTHORITATIVE ANSWERS TO YOUR MOST PRESSING PC QUESTIONS. BY DALE LEWALLEN AND JEFF PROSISE

Will DOS 5.0 Help on a 286?

I have a 286 machine with DOS 4.01. I've been reading with interest about DOS 5.0. I was almost convinced to upgrade until I read that it won't do its memory tricks on a 286. I also read that nine out of ten PC users don't understand the difference between expanded memory and extended memory. Can you explain it to us? If applications run in the lower 640K, then why get 1MB or 2MB of RAM?

BOB METZ
ANDERSON, INDIANA

DOS 5.0 will do "memory tricks" on a 286—it just won't do all of them. Here's the story. DOS 5.0 does two things to increase the amount of memory available to application programs. On a 286, 386, or 486 PC, you can load most of DOS itself into the region of extended memory called the High Memory Area. Typically, this adds anywhere from 45K to 60K to the largest executable program size reported by the MEM command.

If you have a 386 or a 486, DOS 5.0 permits memory-resident programs and device drivers to be loaded into the upper-memory area (the area between 640K and 1MB), where space not used by the hardware in your PC has been converted to pockets of usable RAM by DOS 5.0's EMM386.EXE driver. On a typical PC, EMM386.EXE will create from 64K to 128K of extra RAM for program loading. If you wish, EMM386.EXE will also convert some of the extended memory in your PC to expanded memory. EMM386.EXE won't load on a 286, so you must have a 386 or a 486 to use it.

There are third-party replacements for EMM386.EXE that let you load programs and device drivers into upper memory on some 286s (and on some XT-class PCs, for that matter). These programs will work only with memory boards that contain chip sets such as the Neat Chipset from Chips and Technologies, or that conform to the 1987 Lotus/Intel/Microsoft Expanded Memory 4.0 specification (LIM EMS). Two of the best-known memory managers of this type are QRAM from Quarterdeck (maker of QEMM-386) and 386Max from Qualitas. 386Max is really a 386 memory manager, but when you buy Version 6, you also get drivers for non-386s.

For more information, contact Quarterdeck at (213) 392-9851 or Qualitas at (301) 907-6700. If you prefer to go the shareware route, try Christopher Blum's $25 UMB_DRVR.SYS. Contact Mr. Blum by writing him at 1022 E. Wayne Ave., Wooster, OH 44691, or by calling (216) 262-3786. If you're a CompuServe user, you can download a copy of UMB_DRVR.SYS from *PC/Computing*'s online forum, PC/Contact. Look for the file UMBDVR.EXE in data library 3 (Utilities/Misc.). For further information on how to participate on PC/Contact, see page 222.

As for extended and expanded memory, it is true that they're often confused. Extended memory is RAM that lies above the 1MB mark on 286,

Help About...

CHKDSK'S LOST CLUSTER FILES

WHAT DO I DO WITH THE LOST CLUSTER FILES CREATED WITH CHKDSK? HOW DO I FIGURE OUT WHERE THEY CAME FROM, AND ONCE I'VE DONE THAT, HOW DO I PUT THEM BACK IN THEIR PLACE?

BRYAN KIMSEY
LOS ALAMOS, NEW MEXICO

Usually, there's not much you can do with these files besides delete them. When you run CHKDSK with a /F switch, it searches out problem files on your hard disk (files whose entries in the disk's file-allocation table have been corrupted) and converts any clusters whose owner it can't identify into files in the root directory (a cluster is a group of one or more sectors on the disk). These files are assigned the extension .CHK. The good news is that the simple act of converting lost clusters to valid files repairs the disk; if you run CHKDSK a second time, it will no longer report lost allocation chains. The bad news is that DOS leaves you with the problem of what to do about the CHK files.

Generally, the data in a CHK file once belonged to one of the files on your disk. That data is now missing, but you may not know it until the first time you try to use the file, because CHKDSK repaired the file's directory entry to fix discrepancies in file length that might otherwise result. If the data once belonged to a text file, you may be able to identify it by typing it to the screen with the TYPE command or by calling it up in a text editor. If you can identify the file that it came from, you can append it to the original file by typing

COPY *file1* /B +*file2*

where *file1* is the name of the original file and *file2* is the CHK file. Afterward, delete the CHK file.

If the CHK file is binary, you probably won't be able to identify it. If you can't identify it, delete it. You'll lose the data, but at least you'll have an error-free disk (as a result of running CHKDSK), and you won't have useful disk space going to waste.

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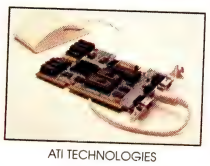

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386, and 486 PCs. It's not an option on 8086- and 8088-based PCs because they lack the hardware necessary to address more than 1MB of RAM. Any PC can be upgraded with expanded memory, however, because expanded memory (memory that conforms to LIM EMS) lies outside the microprocessor's address space. To access expanded memory, a program places calls to an expanded memory manager (EMM), and the EMM maps pages (16K units) of expanded memory into the microprocessor's address space. By alternately mapping pages in and out, a program can access all the expanded memory in the system. EMS 3.2 boards can provide up to 8MB of expanded memory to the system, while the EMS 4.0 standard can provide up to 32MB.

Did We Forget Someone?

In answering Mr. Jason Burrell's request for an inexpensive language compiler ("Programming Shareware," Q&A, November 1991), I was disappointed that you failed to mention Mix Software's Power C. For only $19.95, Mix will provide you with an ANSI C computer complete with function libraries for small, medium, and large memory models. And, for an additional $19.95, you can get Mix's database toolkit for ISAM/Btree files. The manuals for both products are worth the price—there's an excellent tutorial in the Power C manual.

TROY ORR
CLEARLAKE PARK, CALIFORNIA

Although we try to keep abreast of all aspects of personal computing, some products slip by. Such is the case with Power C. Several people wrote to bring this product to our attention and each had very good things to say about Mix and Power C. For more information on Mix products, write the company at 1132 Commerce Dr., Richardson, TX 75081, or call (800) 333-0330 or (214) 783-6001.

One reader even took us to task for suggesting Borland's Turbo C++. While the price is a bit higher than that of Power C or other shareware C compilers, there's a lot to be said for purchasing the Borland product. Remember that there are a great number of books, third-party-type libraries, and even user groups devoted to tools like Turbo C++.

Why DOS Has a 640K Limit

Perhaps in a future article you could explain why the DOS 640K limit can not be changed in a future version. DOS 3.3 was limited to a hard disk partition size of 32MB and DOS 4.0 removed that limitation. Why can't the 640K limit be removed?

CLIFFORD GOLDSTEIN
EAST ELMHURST, NEW YORK

Hard disks and RAM are two different animals. The partition-size problem was solved by tweaking the way DOS manages files on a hard disk. The 640K limit on memory is a more difficult problem that can't be solved by DOS alone.

Here's the problem. At boot-up, Intel microprocessors always start in real mode, which operates within limited parameters. In real mode, hardware constraints limit the microprocessors to addressing at most 1MB of RAM (there are exceptions, but we won't get into the details here). To ac-

Challenge

I HAVE A BATCH FILE THAT REQUIRED ME TO CHANGE DIRECTORIES AS PART OF THE PROGRAM. HOW CAN I SET IT UP SO THAT I ALWAYS RETURN TO THE DIRECTORY IN WHICH I STARTED (WHICH VARIES) AFTER RUNNING THE BATCH FILE?

AMBER ARCHER
SCOTTSDALE, ARIZONA

There are actually several ways to accomplish this. And while there are several shareware solutions, we are interested in ways to solve Amber's challenge that we can publish here in the pages of Q&A—either assembler code that we can turn into a DEBUG script or a batch file. Do you want to take a stab at it? If so, write to us and address your letter "April Challenge." If we publish your solution, we'll convey our thanks by sending you a *PC/Computing* "I Solved the Challenge" T-shirt. Be sure to include your shirt size: S, M, L, or XL.

DECEMBER CHALLENGE SOLVED

The December Challenge came from Paige Rohman of Truman, Minnesota, who was having trouble deleting WordPerfect files that had spaces in their names. The challenge was to come up with a way to delete those files using DOS commands. OK, OK, so this was an easy one.

The co-winners for the December Challenge were Alfred Bruey of Jackson, Mississippi, and Frederic Friar of Lavalette, West Virginia. Both correctly noted that you can delete files with spaces in their names by just using standard DOS wildcard characters. The problem stems from the fact that DOS doesn't recognize spaces as valid characters in filenames, yet some programs allow you to create files with spaces in their names (GW-Basic and BASICA are two examples). Also, DEL interprets a space character in a command as a delimiter separating adjacent command line parameters, not as a character in a filename. If you type

```
DEL BAD FILE.DOC
```

DOS will attempt to delete a file named BAD (no extension) and ignore FILE.DOC because it doesn't realize that BAD FILE.DOC was a single parameter.

However, there is a way to delete the file. On the command line, use the DEL command to perform the deletion but substitute a question mark (the wildcard character that DOS understands to mean any other character in a filename) for the space in the file name. If the name of the file is BAD FILE.DOC, type DEL BAD?FILE.DOC.

You have to be careful when you use this technique, however. The command DEL BAD?FILE.DOC will delete any file whose name begins with BAD, ends with FILE, has one letter in between, and includes the extension .DOC. If other files match this description in the directory where DEL is used, they should first be renamed.

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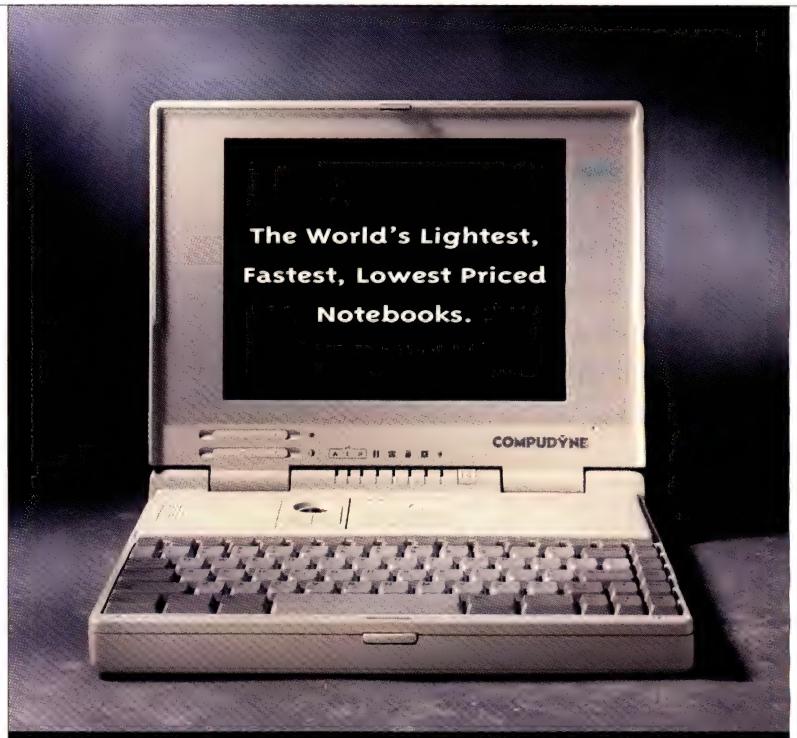

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486SX/25	Intel 80486SX–25 MHz Built-in 8K CPU cache	4 standard 8 & 20 options	80	2.5+	$2,999 $111/mo*
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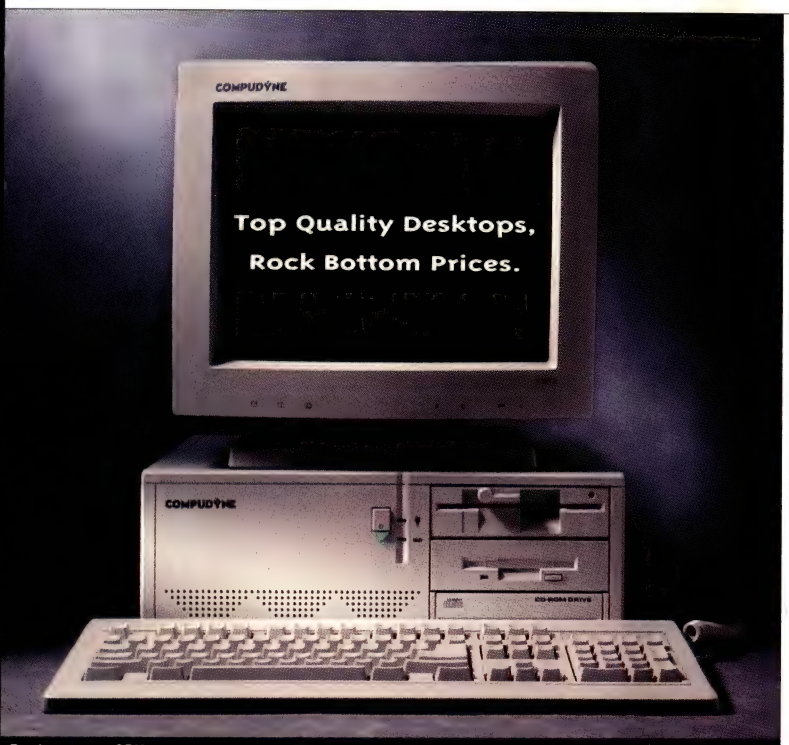

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386DX/33 CACHE	Intel 80386DX–33 MHz 32K CPU cache	4 standard 32 max	120	(as above)	16 bit SVGA card w/ 1MB video RAM & 32,000 color support 14" 1024x768 SVGA non-interlaced color monitor	**$1,799** **$67/mo***
486DX/33 CACHE	Intel 80486DX–33 MHz 128K CPU cache	4 standard 64 max	120	(as above)	(as above)	**$2,199** **$81/mo***
486DX2/50 CACHE	Intel 80486DX2–50 MHz 128K CPU cache New Double Clock CPU	4 standard 64 max	210	(as above)	(as above)	**$2,999** **$111/mo**

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...ss more than 1MB of RAM, the microprocessor must shift into a special mode of operation called protected mode. The problem lies in the fact that DOS is a real-mode-only operating system; neither DOS nor its application programs are compatible with protected mode. The 640K limit exists because the uppermost 384K of the PC's 1MB real-mode address space is reserved for hardware use. That's where the BIOS, adapter RAMs and ROMs, and video buffers are located. The lower 640K is allocated to DOS.

Why not just rewrite DOS so that it's compatible with protected mode? You can, but when it's done, it's no longer DOS; applications also have to be rewritten to run under it. IBM and Microsoft tried their hand at solving this problem and called their effort OS/2. The market roundly rejected it. Until we find a true protected-mode operating system that we can live with, we'll have to make do with the 640K limit on DOS—and continue using makeshift methods such as expanded memory and 386 memory managers to squeeze every last drop of RAM out of our systems.

Thanks for the (Fast) Memories

I have noticed advertisements for 25MHz, 33MHz, and even 40MHz 386 machines that list 100-nanosecond DRAM memory chips in their specifications. Certainly these memory chips are less expensive than faster DRAMs, but it seems to me that they would not keep up with the 40ns and shorter clock-cycle times of these faster computers. Why would you buy a fast machine and then shoot yourself in the foot by using slow memory? It makes no sense to me. Am I missing something?

RON TIPTON
LAS CRUCES, NEW MEXICO

If DRAM speed alone determined how quickly memory could be read or written, then 100ns chips would present a problem. But most 386 PCs with clock speeds of 25MHz or higher use static RAM (SRAM) caches to boost performance. An SRAM cache does for DRAM what a disk cache does for hard disks: It buffers data going to and from DRAM so that if the same information is requested again, it can be delivered from the cache. SRAM is typically three to four times faster than 100ns DRAM, so most SRAM caches can operate at zero-wait states even in fast 386 and 486 PCs. The 486 has an 8K cache built in. Some manufacturers supplement this with an external cache to boost 486 performance even more.

There are other ways to increase the speed of memory access, too, such as interleaved memory architectures and page-mode RAM. As a rule, however, none of these is quite as effective as an SRAM cache. If you're shopping for a fast 386, don't settle for anything less.

Installing a Larger Drive

I'm going to buy a larger hard drive for my 386. Do I need an installation program like Ontrack Computer System's Disk Manager or the Storage Dimensions' product? Can't I install a hard disk without these products? Don't they require an added driver that uses up valuable RAM?

BILL CLOONEY
NIAGARA FALLS, NEW YORK

You don't have to do anything special to add a hard disk as long as your PC's ROM BIOS supports that particular drive type. The drive type identifies certain characteristics of a hard disk, such as how many heads, sectors, and cylinders it contains. For example, on Compaq PCs, a type 34 hard disk has seven heads, 966 cylinders, and 34 sectors per cylinder, resulting in a storage capacity of 115MB. On other PCs, drive type 34 may differ. On 286, 386, and 486 PCs, you normally supply the drive type number through your PC's setup menus. A list of supported hard disks should have come with your PC; if it didn't, contact the PC's manufacturer or call a hard disk supply house. To add a supported drive, all you have to do is plug it in and inform your PC of the new drive type by rerunning the setup.

If the new drive is not supported by the BIOS, you have four options:

1. Knowing the numbers of heads, sectors, and cylinders the drive has, pick a drive type from your PC's setup menus that matches these figures as closely as possible. If you choose this route, it's important to choose a drive type from the BIOS that has the same number of heads and sectors as the drive you're installing, but fewer cylinders. For example, if the new drive has seven heads, 732 cylinders, and 17 sectors per cylinder, and you're given the choice between a drive type with 698 cylinders and one with 1,024 cylinders, select the former. One drawback to using this method: You won't be able to use the entire capacity of the drive.

2. Upgrade the ROM BIOS in your PC to a version that supports the drive in question. Contact your PC's manufacturer to find out if an upgrade is available and whether the updated BIOS supports your drive.

3. Use a third-party disk driver such as Ontrack Computer Systems' Disk Manager or Storage Dimensions' SpeedStor to make up for the lack of BIOS support. Yes, these drivers do require RAM, but they let you use all of the drive's storage space and they don't require a hardware upgrade. You can write Ontrack at 6321 Bury Dr., Suite 15-21, Eden Prairie, MN 55340, or call (612) 937-1107. Storage Dimensions can be reached at 1656 McCarthy Blvd., Milpitas, CA 95035, or (408) 954-0710.

4. Purchase a drive that uses a technique called *sector translation* to adapt itself to one of the supported drive types. Tell a drive like this that it's a type 10, and it will adjust its head, sector, and cylinder counts to conform to the definition of a type 10 drive stored in the drive tables of your PC's BIOS. Many IDE drives offer this capability.

There's no shortage of ways to add an unsupported drive type to a PC. You just have to be aware of all the options and their implications.

Changing Default Fonts

I use Word for Windows as my primary word processor. The default font that comes up every time you load Word is 10-point Times Roman. I've looked all over the program but I can't seem to

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1. I am most interested in the following ZEOS system(s).
☐ 386SX ☐ 386DX ☐ 486SX ☐ 486DX
☐ Notebook ☐ All

2. Which accessories are you interested in learning more about?
☐ Network products ☐ CD ROM
☐ Extended Warranty ☐ Other _____

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3. Between the two, what % of the time would you use your computer?
___ % Business ___ % Home = 100%

4. Indicate % time to be spent on software applications:
_____ % Spreadsheets
_____ % Word Processing
_____ % Graphics
_____ % Other _____

5. How many PCs do you intend to purchase within the next twelve months?

Quantity	Time Period
_____	Within 3 months
_____	4-6 months
_____	7-9 months
_____	10-12 months

6. How would you rate your computer experience?
Novice (1) to Advanced (5):
1 2 3 4 5 (circle one)

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7. Are you interested in learning about ZEOS' financing programs?
☐ Yes ☐ No

Fast Facts

PC Computing

APRIL 1992

Reading Messages

SCAN [*location*] [*number*] [POSTED] [FROM] [SUBJECT "*title*"] [SIZE] SELECT [*1, 2, 3*] [*1-3*]

Lists messages by number, sender, subject, and date.

Location values include the following:

INBOX Lists unread messages.

OUTBOX [ON *date*][TO *name*] Lists messages you have sent.

DESK [AFTER *date* FROM *name*] Lists messages read during the past five days.

PENDING [BEFORE *date*] Lists messages written but not sent.

ALL Lists messages from all of the above locations.

number Lists message by its reference number.

POSTED Lists messages by the date and time they were posted.

FROM Lists messages by sender.

SUBJECT "*title*" Lists messages by title.

SIZE Lists messages by the number of characters in the text.

SELECT [*1, 2, 3*] [*1-3*] Selects several messages by number.

NEXT Reads the next message in your INBOX.

PRINT [*number*] [*location*] [ON *date*] [SUBJECT "*title*"] [BEFORE | AFTER *date*] [FROM | TO *lastname*]

Displays messages without pausing at the end of each screen.

number Displays messages by scan number.

location Displays messages in that area of your mailbox.

ALL Used alone, it specifies all messages; with parameters, it specifies all that meet certain criteria.

READ [*number*] [*location*] [ON *date*] [SUBJECT "*title*"] [BEFORE | AFTER *date*] [FROM | TO *lastname*]

Displays messages, pausing at the end of each screen.

number Displays specified message.

location Displays message from a specific area of your mailbox.

DRAFT Displays draft message before you send it.

Sending Messages

ANSWER [EACH]

Replies to the most recently read message. This will not work when responding to a telex terminal.

EACH Forwards a reply to all who received the message.

(continued on other side)

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Title: _____ Department: _____

Address: _____

City: _____ State: _____ Zip: _____

Daytime Phone: ( ) _____

Fax #: ( ) _____

1. I am most interested in the following ZEOS system(s).
   ☐ 386SX ☐ 386DX ☐ 486SX ☐ 486DX
   ☐ Notebook ☐ All

2. Which accessories are you interested in learning more about?
   ☐ Network products ☐ CD ROM
   ☐ Extended Warranty ☐ Other _____

3. Between the two, what % of the time would you use your computer?
   ___ % Business ___ % Home = 100%

4. Indicate % time to be spent on software applications:
   _____ % Spreadsheets
   _____ % Word Processing
   _____ % Graphics
   _____ % Other _____

5. How many PCs do you intend to purchase within the next twelve months?

Quantity	Time Period
_____	Within 3 months
_____	4-6 months
_____	7-9 months
_____	10-12 months

6. How would you rate your computer experience?
   Novice (1) to Advanced (5):
   1 2 3 4 5 (circle one)

7. Are you interested in learning about ZEOS' financing programs?
   ☐ Yes ☐ No

MCI Commands

CREATE [DOC] [MEMO]
Opens a new message document for you to compose.
DOC Sends a message without a date-and-address header.
MEMO Sends a message with an envelope header.

FORWARD [*message number*]
Forwards a message to another recipient. Used without a message number, it forwards the most recently read message.

UPLOAD
Uploads addresses from a file onto an envelope.
/UPLOAD ADDRESS
/UPLOAD TEXT

INCLUDE
Issued between slashes in the body of a message, /INCLUDE/ inserts text from other messages based on these parameters: SCAN *number, mailbox area,* SUBJECT "*title*", ON *date,* BEFORE or AFTER *date,* FROM or TO *lastname.*

SEND [ONITE] [4HOUR] [*draft number*]
On its own, sends the most recently written message.
ONITE Adds a low-priority notification to your message.
4HOUR Adds priority notification for electronic mail only.
draft number Posts a message by number from PENDING.

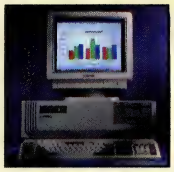
/ Cancels any message at TO, CC, or SUBJECT prompt.
PENDING Retrieves a pending message.
EDIT Enables you to make changes to PENDING messages.
LIST Produces lists for addressing messages.
PC Creates files offline and uploads them into MCI Mail.

Maintenance Commands

EXIT, END, or QUIT Finishes your MCI session.
HELP [*subject*] Provides context-sensitive help.
FILES Lists help files available from the command prompt.
DELETE [*message number*] Clears messages from a mailbox.
FIND Searches for an MCI Mail subscriber's name.
INDEX Lists all topics available to MCI Mail users.

When Buyers Rate ZEOS®:

Support: How Mail-Order Vendors Stack Up



What Buyers Say	CompuAdd Corp. *CompuAdd 325* (with 32K-byte cache) $2,881	Dell Computer Corp.* *Dell System 325P* (no cache) $3,144	Gateway 2000 *Gateway 2000 25MHz 386* (with 80M-byte hard drive, 32K-byte cache) $2,090	Northgate Computer Systems Inc. *Northgate Elegance 386/25* (with 64K-byte cache) $2,839	Zeos International Ltd.* *Zeos 386-25* (includes AmiPro, 1-2-3 for Windows, no cache) $2,540
How long does it take to get a support representative on the phone? (most frequent answer)	1 to 5 minutes	1 to 5 minutes	more than 30 minutes	1 to 5 minutes	1 to 5 minutes
Technical competence of support representative (10 is best)	7.5	8.1	8	7.8	8.1
How long does it take for the vendor to solve your problem? (most frequent response)	Immediate	1 to 2 days	2 days or more	Immediate	Immediate
If your job depended on it, would you recommend buying more PCs from this firm?	12 yes 1 no	13 yes 2 no	12 yes 2 no	15 yes 5 no	15 yes 0 no
Overall rating for service and support (10 is best)	8.3	7.8	7.5	7.8	8.6

NOTES: Customer satisfaction results were compiled from PC Week's survey of PC managers whose organizations have purchased mail-order PCs. 15 customers of each vendor were surveyed.

Prices and specifications shown were supplied by vendors, each of which was asked for a quote on its lowest-priced 25Mhz 386 machine with 4M bytes of RAM, dual floppies, a 100M-byte hard drive, 14-inch Super VGA monitor, keyboard, mouse, Windows and DOS 5.0. Any changes to the configuration or no-cost options are shown. Prices were gathered by calls to each vendor between Oct. 3 and Oct 14, and include tax and shipping charges.

*System is upgradable.

Chart Reprint from October 21, 1991 issue of PC Week. *Reprinted by permission.*

ZEOS Rates #1

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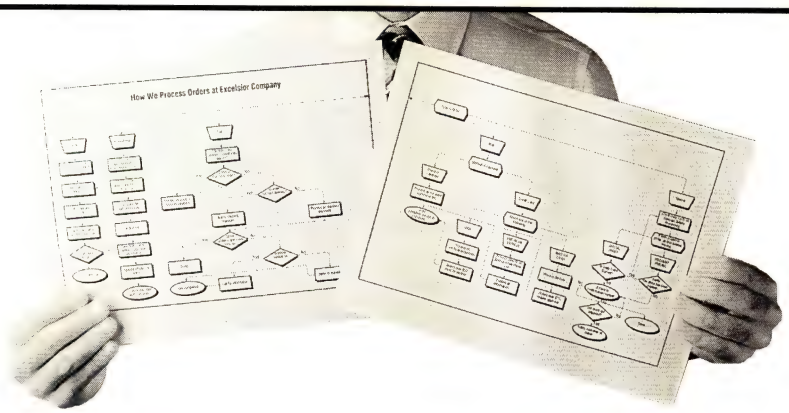

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figure out how I can change the default font to something else.

JEREMY BELCHER
UNIVERSITY PARK, PENNSYLVANIA

Word for Windows stores a lot of its default information in a template file called NORMAL.DOT. The settings in this file are the ones that WinWord uses when you give the File, New command. Although you can choose from other template files, WinWord uses NORMAL.DOT by default.

Here's a really quick way to change your default font. First, open the NORMAL.DOT template file. Open it as you would any other file. You'll see an empty file. Don't let the lack of data concern you. The key element here is the *formatting*, as shown by the menu and the Button Bar. Check the Button Bar. You'll see that the font selected in the NORMAL.DOT file is 10-point Tms Rmn. Next, change the font to the one you'd like to use. You can choose a different point size, too. While you're there, you can also change other formatting settings, like line spacing, text color, default margins, and tabs. When you have made all your changes to the NORMAL.DOT file, save it as you would a regular WinWord document. The next time you create a new document with the File, New command, WinWord will look into your modified NORMAL.DOT file and use the new defaults that you've set up.

To get a better sense of what you can do with document templates, take a look at some of the templates that ship (both with Versions 1.*x* and 2.0) and see how powerful document templates can be.

Do you need help using your computer? Q&A provides practical advice on PC problems. Questions are selected on the basis of broadest interest and may be edited for clarity and length. Sorry, but we cannot answer questions individually. Send your question, along with any screen printouts or other details that could help solve it, to Q&A, Help, *PC/Computing*, 950 Tower Lane, 20th Floor, Foster City, CA 94404. You can also reach us via CompuServe on *PC/Computing*'s PC/Contact online service. Send your comments or questions to 76000,21.

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Reconfigure Your System With a Single Command

A SUREFIRE SYSTEM FOR CHANGING YOUR PC SETUP.

BY LINDA HOUSER-ROHRBOUGH AND MATTHEW LAKE

YOUR PC MUST do many jobs, and to be effective at all of them it needs more than the right programs and peripherals. You must also fine-tune the device drivers and buffers that you load in your CONFIG.SYS files and the memory-resident programs launched by AUTOEXEC.BAT. If you use your PC for a variety of tasks, chances are that a single configuration will be a compromise.

If you need to use a peripheral some of the time—a scanner, for example—you'll need to load a device driver in CONFIG.SYS, maybe assign a large Windows SmartDrive cache to handle the scanned images, and strip some of your usual device drivers to free up more RAM. But when you do file maintenance in DOS, handle spreadsheets in 1-2-3, or maintain a database in Paradox, you'll need different settings.

Maintaining and editing different sets of CONFIG.SYS and AUTOEXEC.BAT files by hand can be tricky. Some people use different floppy disks to boot with different configurations, which is a backward step for any hard disk owner. Here's a system that should work well for everybody. It consists of a batch file, a program that reboots your system, a cheat-sheet that reminds you which configurations do what, and a series of files that will boot up your PC with a different configuration for every task.

Setting Up

Move to the root directory of your boot drive (usually C:) and make a subdirectory called CONFIG using the command MD \CONFIG. Copy your CONFIG.SYS and AUTOEXEC.BAT files into this subdirectory. If you already have multiple configuration files, copy them into the same directory. Rename the files that provide different configurations with descriptive filenames, but retain their file extensions. For example, name the files that optimize your PC for Windows WINDOWS.BAT and WINDOWS.SYS. (Since you won't be putting the CONFIG subdirectory in your DOS search path, don't worry about accidentally running a program or another batch file when you type WINDOWS at the DOS prompt.)

If you have only one set of configuration files, run DOS 5.0's EDIT and make a dummy set of files to test the process. You can spend hours fine-tuning your system, so get started quickly. Open AUTOEXEC.BAT and insert a label in the PROMPT statement that identifies two different setups. For instance, set one prompt with the line PROMPT [WINDOWS CONFIGURATION] PG and save the file as WINDOWS.BAT, and then change the line to read PROMPT [NORMAL CONFIGURATION] PG and save it as NORMAL.BAT. Open and save CONFIG.SYS under the two names, also. If you have time, you can also fine-tune AUTOEXEC's PATH statement and loaded files, as well as CONFIG's loaded files, buffers, and drivers.

While you're still in the text editor, record all the configurations for which you have AUTOEXEC and CONFIG files and give their names. Use the following format for the record, since it will serve as a help screen in the batch file you're about to create.

```
Supply one of these parameters:
WINDOWS to reboot with a Windows
  configuration
NORMAL for a general-purpose
  configuration
For example, to boot with a
  windows configuration, type
CONFIG WINDOWS
```

Save the file under the name CONFIG.DAT in your CONFIG subdirectory. You can update this file whenever you add a new configuration.

BOOTUP.COM and CONFIG.BAT

The next step is to create a small utility program that will reboot your system automatically. (Or download RECNFG.EXE, which contains BOOTUP.SCR and CONFIG.BAT, from data library 1 [Hot Tips/Secrets] of PC/Contact, *PC/Computing*'s online forum.) Open your text editor and copy the listing entitled BOOTUP.SCR line by line, making sure that you don't insert spaces at the end of lines and that you leave a blank line between the body of the script and the last four lines. Save the file as straight ASCII in your UTILITY or BATCH subdirectory under the name BOOTUP.SCR. Exit to DOS and enter this line:

```
DEBUG < BOOTUP.SCR
```

CONFIG.BAT

```
@ECHO OFF
REM CONFIG.BAT, part of a multiconfiguration boot system
CLS
REM Check that the necessary parameter is supplied
IF "%1" == "" GOTO NOPARM
REM Copy the config files to the root directory
COPY C:\CONFIG\%1.SYS C:\CONFIG.SYS > NUL
COPY C:\CONFIG\%1.BAT C:\AUTOEXEC.BAT > NUL
CLS
REM Warning that system will reboot; option to quit
ECHO
ECHO CONFIGURATION FILES %1 COPIED
ECHO TO EXIT WITHOUT REBOOTING, PRESS CTRL-C. OTHERWISE,
PAUSE
BOOTUP
:NOPARM
REM Call up help file CONFIG.DAT if the boot parameter was missing
CLS
ECHO
TYPE C:\CONFIG\CONFIG.DAT
```

PC Contact

This will invoke DEBUG, redirect the script into it, and create a small program called BOOTUP.COM, which will reboot your system whenever you type BOOTUP or when a batch file boots for you.

The next step in creating a multiple-configuration system is to make such a batch file. Copy CONFIG.BAT into your text editor. You needn't enter the REM comments unless you think they'll come in handy for clarifying things later. Save CONFIG.BAT in your BATCH directory.

Using the System

Resetting your PC's configuration is now a two-word process executed from the DOS prompt. Type CONFIG followed by the configuration you want. If you enter just the command CONFIG, you'll get a prompt of available configurations. Once you enter the command and configuration, you'll be prompted that the relevant CONFIG.SYS and AUTOEXEC.BAT files are in place, and you'll be given the option to reboot.

BOOTUP.SCR

```
N BOOTUP.COM
a100
mov dx,40
mov ds,dx
mov bx,72
mov word ptr [bx],1234
jmp ffff:0

RCX
0011
W
Q
```

PCContact

There's a potential problem with this system. When you put new programs on your hard disk, the installation routines generally want to alter one or both of your configuration files. They'll generally save the existing ones under some title like CONFIG.BAK or AUTOEXEC.XXX. Good installation routines tell you about changes and give you the right of veto. Other routines proceed without warning.

Since the commands in CONFIG.BAT overwrite the configuration files in your root directory, you need to be diligent in updating the files in your CONFIG subdirectory whenever you install new programs. Run DOS's COMP command after installation routines to check that liberties haven't been taken with your files. For example, if your Windows configuration prompt is showing, go to the root directory and type

```
COMP AUTOEXEC.BAT
 \CONFIG\WINDOWS.BAT
COMP CONFIG.SYS
 \CONFIG\WINDOWS.SYS
```

If DOS says that [illegible] don't compare, just open both [illegible] make note of the diff[illegible] then update the files in [illegible] directory accordingly.

[illegible] Rosbough is a consultant based in Van Nuys, California.

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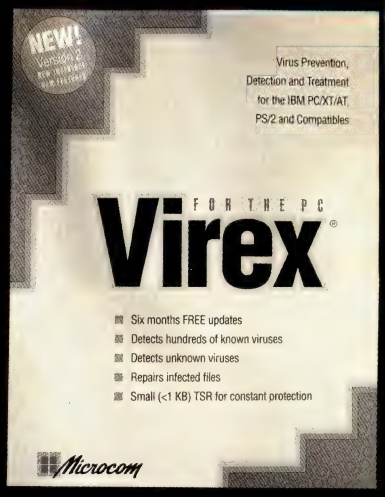

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Circle 226 on reader service card.

Breathe New Life into Your Tired Old 386

SOMETIMES UPGRADES ARE BETTER THAN A NEW CPU. **BY PRESTON GRALLA**

SOMETIMES SEEMS LIKE THE
le-art system it once
y eye the ads for newer
ying a whole new ma-
the question. What to do?
achine new life by upgrad-
general, you can do three
turn your 386 into a higher-
ance system for under $500: add
ry, buy a speedier hard disk, or
ade the video system. (For details
upgrading a 286, see "Making the
pgrade," March, page 112.)

Memory Breakthrough

The easiest and cheapest way to boost your 386's performance is to add more memory. Standard system memory is widely available for under $50 a megabyte. The benefit is increased speed. Your system can store and retrieve more information more quickly in RAM than it can by constantly accessing your hard disk for it. In Windows, for example, more RAM means less swapping to disk, and you'll notice a great improvement in speed.

While adding RAM to your system is a relatively straightforward operation, you do have to remember a few things. Make sure the speed of your new memory chips matches that of the old (the speed is typically stamped on the chip). Find out from the PC manufacturer or from your system manual how the memory should be added. If you have 4MB of RAM, for example, you might have to add memory chips in 4MB increments.

Also, check to see whether the machine accepts 1MB or 4MB SIMMs. You won't be able to mix and match 1MB chips with 4MB chips, but if your system accepts 4MB SIMMs, you might be able to add more memory directly on the motherboard without having to purchase a memory expansion card.

If you've run out of space on the motherboard, you'll need to spend a little more for a memory card. These boards are often proprietary, so check with your manufacturer to see what kind your system accepts. Whenever possible, get a card that uses the 32-bit memory slot in most 386s. Using a standard 16-bit slot for a memory card slows the system because it forces the PC to access memory 16 bits at a time instead of 32 bits at a time.

Hard Drive Headway

A faster, larger hard disk can also give your system a much-needed boost for only a few hundred dollars. Generally, you'll want to buy a new hard disk that has the same kind of controller you already have; most 386s use IDE or ESDI drives, and some high-performance systems use SCSI. If you have an ST-506 drive, consider upgrading to the newer IDE or ESDI drives that use faster, more efficient technology.

Choose a hard disk with the fastest access time your budget will allow. If your computer runs at 20MHz or faster, look for a hard disk with an access speed of under 20 milliseconds. For a processor running between 16MHz and 20MHz, you can get by with a hard disk with an access speed of from 20ms to 28ms. Look for a hard disk with a transfer rate of at least 700 kilobytes per second, and preferably 800 kilobytes per second or faster.

For a 386, don't buy a hard disk with less than 80MB of memory, and if you run Windows or any graphics application, 100MB should be the minimum size. When selecting a new drive, be sure to ask whether the given size is the formatted capacity of the

Performance Upgrades for Under $500

Give your 386 a boost by adding a new hard drive, more memory, or a faster video card.

Upgrade	Cost	Benefits	Buying Tips
Memory (at least 4MB)	$170 to $300 per 4MB, depending on your system	Speeds up system Windows programs run faster Holds larger files in memory	Get RAM with same speed of RAM already in system Check if your system needs proprietary RAM Check whether to add RAM in 1MB, 2MB, or 4MB increments
Hard disk (at least 80MB)	$270 to $750, depending upon size and make	Programs load and run faster Faster access to data Holds more programs and data	For 20MHz or faster PCs, look for a disk with an access time under 20ms For 16MHz PCs, look for a disk with an access time of 20ms to 28ms Get a transfer rate of at least 700 kilobytes per second
Video card	$250 to $570, depending upon resolutions and memory	Speedier screen redraws Higher resolutions More colors onscreen	For graphics programs or for resolutions of 1,024 by 768 or higher, get a card with at least 1MB of memory Look for VRAM instead of DRAM For Windows, consider a Windows accelerator

disk, since it may lose 10MB or more when formatted. Also ask about the dimensions of the hard disk plus its casing, and measure your own drive bay to be sure it will fit. Small-footprint models may not accommodate larger drives.

If you can spare the expansion slots, another alternative to consider is a hard-drive-on-a-card, such as Plus Development's HardCard (800-624-5545). It costs more, but it's easier to install than a normal hard disk, and it's just as fast.

When you add a new hard disk to your system, make it your boot-up disk. Put your most frequently used applications there and store your data on the old disk. The new, faster drive should speed up many applications, especially disk-intensive ones such as databases.

A FASTER, LARGER HARD DRIVE SPEEDS UP MANY APPLICATIONS, ESPECIALLY DISK-INTENSIVE ONES.

Video System Upgrade

A video card upgrade, particularly for graphics applications such as Windows, will also give your software a greater boost than a faster CPU.

When shopping for a new video card, the first thing to check is what resolutions it supports. A video card that supports resolutions above standard 640-by-480 VGA, such as 800 by 600 and 1,024 by 768, will let you display more information onscreen at once so you spend less time scrolling around and resizing Windows. Don't pay extra for a card that supports up to 1,280-by-1,024 pixels unless you have applications that can take advantage of it. There are currently no standards for this resolution, and few applications support it.

The amount of memory on the video card will determine how many colors you can display onscreen at various resolutions. A monitor with a resolution of 1,024 by 768 won't be able to display the full 256 colors it's capable of unless there's at least 1MB of memory on the graphics card driving it. Any less and you'll be limited to 16 colors.

When buying a video card, keep in mind that few programs take advantage of 256 colors, and most applications are faster when only displaying 16 colors. Windows itself handles only 16 colors, although some Windows applications can display 256 colors. Graphics programs tend to use 256 colors, though, so if you use them look for a video card with 1MB of memory. In any event, choose a graphics card with at least 512K of memory, or 1MB if you plan to take full advantage of the 1,024-by-768 mode.

It's not only the amount of memory on a board that's important—also check the type of memory on the board. Look for a video card that uses VRAM instead of DRAM; although VRAM is slightly more expensive, it's also faster.

For speedier Windows performance, consider buying a graphics accelerator card, sometimes called Windows accelerators. Although these cards were once priced only for high-end users, they're now widely available for under $450. Graphics accelerator cards speed up Windows operations by handling tasks such as redrawing images and resizing windows, which tie up your CPU and slow down your system. (Read more about graphics accelerator cards in "Smash That Hourglass: Graphics Accelerators for Windows," March, page 174).

PC/C Advocate

QUICK RESULTS, EXPERT ADVICE

POLARIS MAKES AMENDS FOR REGISTRATION CATCH-22

I recently purchased PackRat 3.0 from Polaris Software for $195. The software arrived and I installed it. I noticed that the package was missing a registration card, but I didn't worry about it because in my experience, when you buy directly from the software publisher, the company registers the software automatically.

Several months later, I called Polaris to upgrade to PackRat 4.0. The person I spoke to could not find my name in the registered user database, although she did find a record of my purchase. I explained that there was no registration card in the package, and she took my order for an upgrade. A week later, Polaris called me back and told me it could not ship the upgrade because I was not a registered user. I again explained the problem and was told to ship an original disk to Polaris as proof of ownership. I had to package the disk, go to the post office, and get the proper postage. It took 90 minutes of my time to correct Polaris's error. I've never had a company make it so difficult to purchase a product.

I sent in the original disk for registration purposes only, not the upgrade. Polaris's software is excellent, but I don't think I should have to pay for continued bad service.

BRAD WIESLEY
BOULDER, COLORADO

When we brought your situation to Polaris's attention, director of marketing Chad Kinzelberg maintained that Polaris simply wanted proof of ownership, which is why it asked for an original disk. The company did not intend to make it difficult for you to upgrade. Without proof of ownership, Kinzelberg says, you could easily have given the registration card to another user.

After reviewing your situation, Polaris accepted responsibility for failing to include a registration card in the package and offered an apology. As a gesture of goodwill, Polaris sent you a complimentary upgrade to Version 4.0 of PackRat.

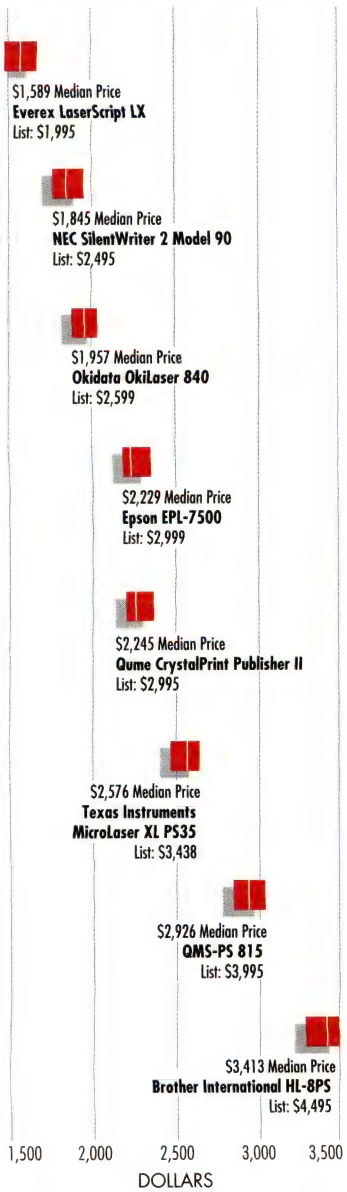
WORLDWIDE VIDEO TAKES IN US VIDEO'S CUSTOMERS

I own four US Video VGA cards that I bought from the company as a package deal. Just under a year after I bought them, one of the

Street Prices

PostScript Printers

PostScript printer prices are slowly dropping. The OkiLaser 840, for example, cost $1,995 to $2,350 last June and now costs $1,895 to $2,309, though the list price has dropped $400.



Models from Brother, Okidata, and QMS are 8 page-per-minute printers; all others print 6 pages per minute. All printers include 2MB to 3MB of memory.

These prices reflect the general range for retail sales throughout the continental United States as provided to *PC/Computing* by *HardFacts on Disk*, the desktop reference of computer hardware for industry professionals. For further information, contact *HardFacts* at (508) 927-1370.

PC/C Advocate — QUICK RESULTS, EXPERT ADVICE

video cards failed, causing my PC to lock up when I tried to boot it. According to the board's documentation, I need to contact US Video for a return authorization number for warranty repairs. I've tried to reach US Video for several weeks, but each time I call, I get a recorded message that says all representatives are busy. I've left several messages on the answering machine, but I haven't received a response. I also sent the company a letter via certified mail; the letter was received, but still I got no response.

My warranty has now expired, but my certified-mail receipt proves that I tried to contact the company for repairs while the card was still under warranty. I'd appreciate any help you can offer.

BRYAN NAPIER
SCHAUMBURG, ILLINOIS

When we tried to contact US Video, our experience was similar to yours: An answering machine offered to take a message, but our messages were never returned. Several weeks later, however, we tried calling again. This time the message told us that another company, Worldwide Video (201-491-5147), was now handling sales and marketing for US Video products.

After calling Worldwide Video, we learned from vice president Pete Baczor that his company manufactures US Video's boards and has acquired the rights and patents to sell and market them. Regarding US Video, Baczor would only say that the company is "catatonic." We were unable to reach anyone at US Video, and our messages were not returned.

Because you have proof that you tried to contact US Video while your video card was still under warranty, Worldwide Video honored the warranty on the board and covered the cost of repairs.

MICROTOUCH WARRANTY PAST DUE

I bought an UnMouse Tablet from Multiple Zones International, a mail-order house in Redmond, Washington. The first UnMouse didn't work properly, so I returned it to Multiple Zones for a replacement. After about two months, the replacement tablet also stopped working. Multiple Zones guarantees the product for 30 days, but the tablet also has a one-year warranty from the manufacturer, MicroTouch Systems, in Wilmington, Massachusetts. I called MicroTouch and a technician told me to send the tablet to the company with a letter of explanation and a copy of the purchase receipt.

Since then, I haven't received a reply from MicroTouch, although I've made repeated follow-up calls and left messages.

JANUSZ UMBREWICZ
SAYREVILLE, NEW JERSEY

MicroTouch System's director of marketing, Janet Panier, was surprised to hear of the problem and immediately looked into it. The following day, MicroTouch Systems sent you a brand new UnMouse Tablet. "We have also made some substantial changes to our service department's procedures to ensure that this situation will not happen again," Panier told us.

DARIANA WINS BACK CUSTOMER

I've run into a stone wall with Dariana, makers of WinSleuth, a Windows system information utility. I sent the company a letter detailing a bug in the program and asked whether a fix would be available. When I didn't hear anything from the company for several months, I sent two more letters requesting a response. I still haven't heard from the company about the fix, though I did receive an offer to upgrade to Version 2.0. I'd like to upgrade to Version 2.0 because it seems to have solved all the problems of the earlier version, but I can't see spending money on an upgrade when the company insists on not winning me over as a customer.

ROSS FLAVEN
SAN DIEGO, CALIFORNIA

Dariana's vice president of marketing and sales, Frank Westall, was anxious to resolve the problem. For your trouble, Dariana sent you a complimentary copy of the upgrade, WinSleuth 2.0, which should solve the problems you had with Version 1.0. If you're still not satisfied, Dariana will give you a refund for the original version as well.

TIP OF THE MONTH

If you worry about radiation or suffer from eye fatigue, neck pain, or headaches when working at your PC, there are things you can do. The Center for Office Technology, a coalition of employers, associations, and manufacturers, publishes several booklets on VDT health and safety issues. They are available free from the Center for Office Technology at 1800 N. Kent St., Suite 1160, Rosslyn, VA 22209, (703) 276-1174.

Do you need help resolving a consumer issue? Drop a note to the PC/C Advocate, PC/Computing, *950 Tower Lane, 20th Floor, Foster City, CA 94404. Be sure to include a daytime phone number and any correspondence relating to your problem. Letters become the property of* PC/Computing *and will be edited for length and clarity. Sorry, but we cannot respond to letters individually.*

You can also reach the PC/C Advocate via CompuServe on PC/Computing*'s PC/Contact online service. Send your messages to PC/C Advocate 76000,26.*

Price breakthrough! A 486 SX PC for $1999—with "The Works!"

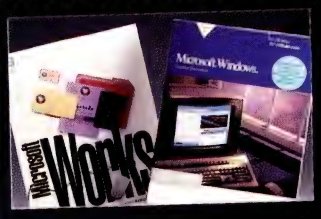
The new Tandy® 4825 SX:

- *MS-DOS® 5.0, Microsoft Windows®* and *Works for Windows* pre-installed
- Fast 25MHz 80486 SX, with ability to upgrade

intel inside

- 120MB hard drive
- 4MB of RAM, expandable to 32MB on main board
- SuperVGA graphics with 512K VRAM, expandable to 1MB
- 1.44MB floppy drive
- Includes two-button mouse for ease of input with *Windows* and *Works*
- Monitor sold separately

Available at Radio Shack®, America's Technology Store℠



TANDY

#25-5142 price applies at participating Radio Shack stores and dealers. Includes Microsoft Windows and any new version release occurring before June 30, 1992. Radio Shack is a division of Tandy Corporation. Microsoft, MS-DOS and Windows/licensed from Microsoft Corp. The Intel Inside Logo is a trademark of Intel Corporation.

Circle 221 on reader service card.

SOME MOR BLOWS THE COMP

Here's news that's going to make a lot of computer manufacturers wince. We've dramatically reduced the prices of our entire range of Dell systems. So now you can buy one of the best computers on the market without knocking out your budget.

And while other companies' standards often go down along with their prices, we'll still give you the service and support package described by *PC Week's* editors as "overkill." Our toll-free technical hotlines solve 90% of reported problems over the

LOWERED BY $300

NX20 from Dell 20 MHz i386™SX System
System includes:

- 2 MB RAM
- 40 MB Hard Drive
- VGA LCD
- 60 MB hard drive also available
- 8.3 x 11" footprint
- 6.8 lbs.
- 2-3 hour battery life
- CCFT edgelit triple supertwist display
- 32 Gray levels
- Full size keys with 3mm travel
- Modem, memory and coprocessor options
- One year return to factory service

LOWERED BY $300

Dell® 486P/20 20 MHz i486™SX System
System includes:

- 4 MB RAM
- 80 MB Hard Drive
- UltraScan™ 14C Color Monitor
- Upgradeable processor design
- Up to 40% faster performance than 386DX systems
- Keyboard Password Protection
- RAM expansion to 64 MB
- 1024 x 768 non-interlaced monitor with 70 Hz refresh rate for flicker free operation
- 1 floppy drive

LOWERED BY $800

Dell 486P/33 33 MHz i486 System
System includes:

- 4 MB RAM
- 100 MB Hard Drive
- UltraScan 14C Color Monitor
- Upgradeable processor design
- Programmable Flash EPROM for easy BIOS upgradeability
- Expands to 64 MB RAM using 32-bit SIMMs with gold-plated connectors
- 1024 x 768 non-interlaced monitor with 70 Hz refresh rate for flicker free operation
- 1 floppy drive

[1]Same-day 4-hour on-site service available provided that Dell initiates service dispatch by 2 pm CT. 4-hour service contract must be purchased. All prices and specifications are subject to change without notice. **Payment based on 36-month, open-end lease. ◇Leasing arranged by Leasing Group, Inc. In Canada and Mexico, configurations and prices may vary. Dell is a registered trademark, UltraScan and SmartVu are trademarks, and Critical Care and TechFax are service marks of Dell Computer Corporation. i386, i486 and the

E LOW TO TITION

phone, usually in 10 minutes or less. Our TechFax℠ line offers system information 24 hours a day. And if needed, a trained technician can be at your desk-side with a solution in hand, usually by the next business day.△ You can even get 4-hour service with our optional Critical Care℠ plan.†

Perhaps this is why Dell comes so highly recommended. After all, we've won *PC Week's* Corporate Satisfaction Poll for PCs, portables and servers an unprecedented eight times.

So call us and find out why over two-thirds of the FORTUNE 500® now use Dell computers. But don't bother talking to our competitors; they're a little short of breath.

We just took the wind out of their sales.

DELL COMPUTER CORPORATION

800-232-5618

TO ORDER, CALL. PLEASE REFERENCE 11X56.
HOURS: 7AM-9PM CT MON-FRI, 9AM-4PM CT SAT, 10AM-3PM CT SUN
IN CANADA, CALL 800-668-3021. IN MEXICO, 95-800-010-0664.

LOWERED BY $1,000

Dell 486D/33 33 MHz i486 System
System includes:

- 4 MB RAM
- 230 MB Hard Drive
- UltraScan 14C Color Monitor
- 5 storage bays, 6 16-bit slots
- 8 KB internal cache
- RAM expands to 64 MB using 32-bit SIMMs with gold-plated connectors
- 1024 x 768 non-interlaced monitor with 70 Hz refresh rate for flicker free operation
- 1 floppy drive

INTRODUCING

Dell 325SX 25 MHz i386SX System
System includes:

- 2 MB RAM
- 50 MB Hard Drive
- VGA Color Monitor
- 1024 x 768 integrated video support
- Novell certified
- Expandable to 8 MB RAM
- 3 16-bit expansion slots
- Keyboard Password Protection
- 1 floppy drive

INTRODUCING

Dell 486D/16 16 MHz i486SX System
System includes:

- 2 MB RAM
- 50 MB Hard Drive
- VGA Color Monitor
- Upgradeable processor design
- Programmable Flash EPROM for easy BIOS upgradeability
- RAM expands to 64 MB using 32-bit SIMMs with gold-plated connectors
- SmartVu™ Diagnostic Display
- Supports up to 5 storage devices
- 6 16-bit expansion slots
- 1 floppy drive

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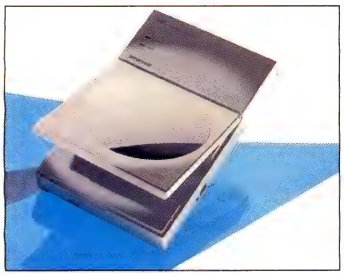
Circle 170 on reader service card.

What to Ask When Buying



. . . A CD-ROM DRIVE

1. HOW FAST IS IT? The speed of a CD-ROM drive is measured by its access time and transfer rate. A fast access time is important for text-based database search and retrieval applications. Rated access times range from 275ms to 1,500ms; 500ms is average, under 400ms is fast. A transfer rate of 150 kilobytes per second is required for multimedia applications using video and animation.

2. HOW LARGE IS THE BUFFER? To maintain a consistent transfer rate of 150 kilobytes per second (necessary for displaying smooth graphics, video, and animation), the drive should have a 32K to 64K buffer. For text search and retrieval, a buffer isn't necessary.

3. DOES IT USE A SCSI OR PROPRIETARY INTERFACE? Most new CD-ROM drives use SCSI controller cards, although a few still use proprietary interfaces. Avoid proprietary drives; they limit you to the manufacturer's technology (and prices) and are typically slower than SCSI drives. Check to see whether the controller is included; if not, it could add several hundred dollars to the total cost.

4. IS IT AN INTERNAL OR EXTERNAL DRIVE? Internal drives fit into a 5¼-inch drive bay but are harder to install than external drives.

5. IS DRIVER SOFTWARE INCLUDED? The drive should include device drivers from the manufacturer that allow it to recognize the controller card. You'll need Microsoft's CD-ROM extension drivers (MSCDX), which let DOS work with the manufacturer's drivers. The drive should include MSCDX Version 2.2, which is required for multimedia and many newer applications.

5. WILL IT PLAY AUDIO DISCS? Most CD-ROM drives can play audio discs. A stereo headphone jack and audio software should be included.

Memory Is Cheap—but Only If You Know Where to Look

THE PHANTOM SAVES A BUNDLE ON SIMMS

I REMEMBER WHEN 4MB SEEMED LIKE ACRES of memory, more than any person could ever use. But that was before Windows 3.0. Run several large Windows applications at once with just 4MB of RAM these days and you'll see a state-of-the-art 33MHz 386 slow to a crawl. Patience has never been my strong suit, so I decided to spring for four more 1MB 80-nanosecond SIMMs to add to my 386.

Shopping for memory is straightforward. Match the speed (measured in nanoseconds) and type of chips already in your system (DRAM chips vs. SIMMs and 1MB vs. 256K chips, for example), and you're ready to go. All you need is a company that guarantees the memory is compatible with your system and offers the best price. And since the best prices are generally found through the mail, I armed myself with a stack of magazine ads and placed some calls.

The first call went out to Northgate (800-548-9016), the manufacturer of my system. When I asked the price of four 1MB SIMMs, however, the answer wasn't pretty: a whopping $300. In the early days of memory shortages, that might have been reasonable, but these days, $75 per megabyte is too much.

Turning to other mail-order ads, I found a glossy spread for PC Zone (800-258-8088). Known for its rock-bottom prices on software, PC Zone's memory prices were another matter: $58 per megabyte was better than Northgate's price, but still no bargain. Fast Micro fell by the wayside, too, asking $59 per megabyte. JDR Microdevices wasn't much better at $54.95 per megabyte.

I knew there had to be a better way. Memory boutiques—mail-order companies that specialize in selling memory—had to offer lower prices. Their ads aren't exactly inviting (they're usually crammed with small print and numbers), but because they deal only in memory, I figured their prices would be more competitive.

I was right. Universal Memory Products (800-678-8648) advertised $50 per megabyte. Its ad promised a five-year warranty and guaranteed system compatibility or your money back. When I called the company, I was even more impressed; at $49, the price per megabyte was lower than advertised. It was a good deal, I have to admit. But the Phantom never stops at good—only great will do. I pressed on.

L.A. Trade's (800-433-3726) ad caught my eye next: $44 a megabyte. When I called the company however, the salesperson told me the price was now $46. That was better than Universal, but I thought I'd hold out for a cheaper price. (And besides, I didn't like the idea of being quoted a higher price than the one in the ad.)

I.C. Express's ad (800-877-8188) also looked promising. The large type proclaimed only $38 for 1MB 80ns SIMMs. Closer inspection, however, revealed that the price applied only to lots of 12. (For a moment I considered it—16MB of RAM, imagine the possibilities! —but I quickly came to my senses. Even the Phantom doesn't need *that* much memory . . . for now, that is.) For fewer than 12 SIMMs the price was $42 per chip. A good price, but unfortunately, I.C. Express also has a hefty 20 percent restocking fee on nondefective returns (which means there's no written guarantee of compatibility).

I was considering going back to L.A. Trade when I came across a full-page, no-nonsense ad from memory specialist H. Co. Computer Products (800-726-2477, ext. 208). H. Co.'s advertised price of $45 per megabyte was good, but I'd seen better. What was really interesting was the promise at the bottom of the

Paying again and again for virus protection is enough to make you ill.

Frankly, paying anything at all is pretty nauseating.

But that's nothing compared to the feeling you get in your stomach when a drive full of data goes down the drain.

So you pay.

Then you pay again. For upgrades. Or quarterly "updates."

But even that doesn't buy you much peace of mind. Because each new day brings an average of six new viruses into the world.

Which means all anti-virus programs are inherently obsolete.

Except one.

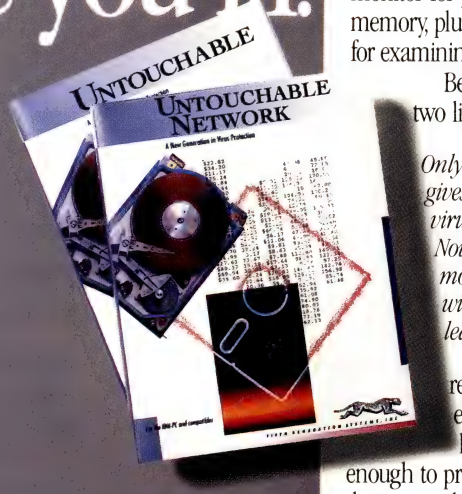
Introducing Untouchable.™ The only software in the world that gives you 100% protection.

Today.

And tomorrow.

Like other anti-virus software, Untouchable is equipped with a TSR monitor for patroling your system memory, plus a scanner/remover for examining the files on your disk.

Between them, these first two lines of defense can recognize and obliterate hundreds of the little buggers — enough to protect you from 95% of the potential carnage.



Only Untouchable Network gives you centralized virus protection. Now you can install, monitor and control without having to leave your seat.

If you find that statistic reassuring, then you probably like the odds in Russian Roulette.

If you don't, you'll want to know that Untouchable is equipped with a unique *third* line of defense, which has been mathematically proven to be, well, untouchable.

Instead of looking for viruses, this third line of defense looks for *changes in your executable and system files.*

If the change is but a single byte, Untouchable will spot it and, using our patent-pending recovery technique, reconstruct the file to its original state.

The process is known as Generic Differential Detection, and certain other programs claim to perform it, too.

But only Untouchable calculates file signatures using not one, but two proprietary algorithms that can't be reverse-engineered.

Only Untouchable guarantees 100% safe recovery of infected files. (Unlike other programs that proudly generate corrupted files, Untouchable knows when the jig is up and doesn't attempt recovery.)

Only Untouchable can provide centralized network virus protection. In fact, Untouchable Network has enough virus alerts and reporting mechanisms to settle the stomach of even the most nervous Netware® administrator.

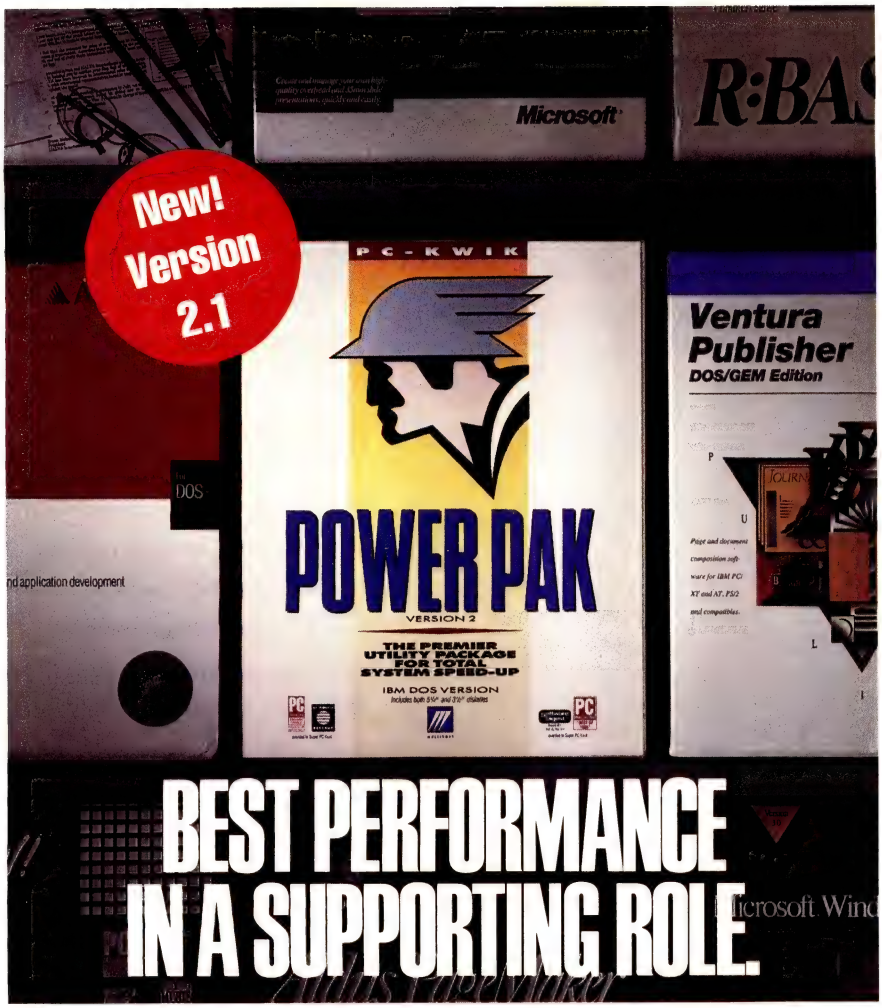
And only Untouchable is backed by our vaunted 24-hour toll-free technical support and a one-year money-back guarantee.

If you're worried about viruses — and you should be — don't reach for the Maalox.® Reach for the phone. Dial **1-800-999-2735**.

You'll feel better right away.

FIFTH GENERATION SYSTEMS, INC

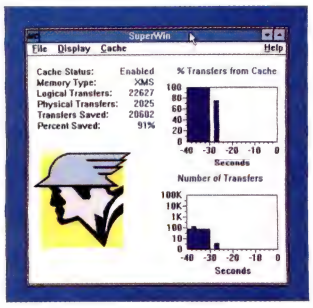
Circle 268 on reader service card.



THE AWARD-WINNING UTILITY FOR TOTAL SYSTEM SPEEDUP.

PC-Kwik® Power Pak gives you the power to make all your programs perform like the stars they're meant to be. Disk, screen, keyboard, printing and command-line operations run up to ten times faster. Automatically.

Power Pak's industry-leading disk cache (Super PC-Kwik) and other integrated system-accelerators give you the ultimate performance boost, at a surprisingly modest cost.



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page: "We will match or beat any legitimate advertised price." I figured I'd quote the advertised price of $42 from I.C. Express and see whether H. Co. would stand behind its promise.

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I was stunned. Truth in advertising—what a concept. There was no surcharge for paying with a credit-card, and the memory carried a lifetime warranty. Though the ad warned of a 15 percent restocking fee on returns, my salesperson assured me that if the memory wasn't compatible I could exchange it. Relying on a verbal guarantee isn't a good idea, but sometimes I live dangerously so you don't have to. I placed my order. The total came to $179: $168 for the memory and $11 for two-day air shipping.

Several days later, a small box arrived containing my SIMMs. There was no documentation to speak of, just the chips (which is why you'll want to call your PC maker or consult your manual before ordering memory). When I discovered the chips were Italian, I hesitated. It's one thing to buy a sleek Italian suit, but memory chips? Not only that, but instead of a full bank of chips sitting on each SIMM, as I was accustomed to, there were only three chips per SIMM.

PHANTOM SHOPPER

RELYING ON A VERBAL GUARANTEE ISN'T A GOOD IDEA, BUT SOMETIMES I LIKE TO LIVE DANGEROUSLY.

But my apprehension disappeared when I snapped in the SIMMs, ran the setup utility to change CMOS, and was ready to go. It worked! I could now run more programs simultaneously in Windows than I'd ever need . . . this month. Better still, I saved $130 by shopping around. ◪

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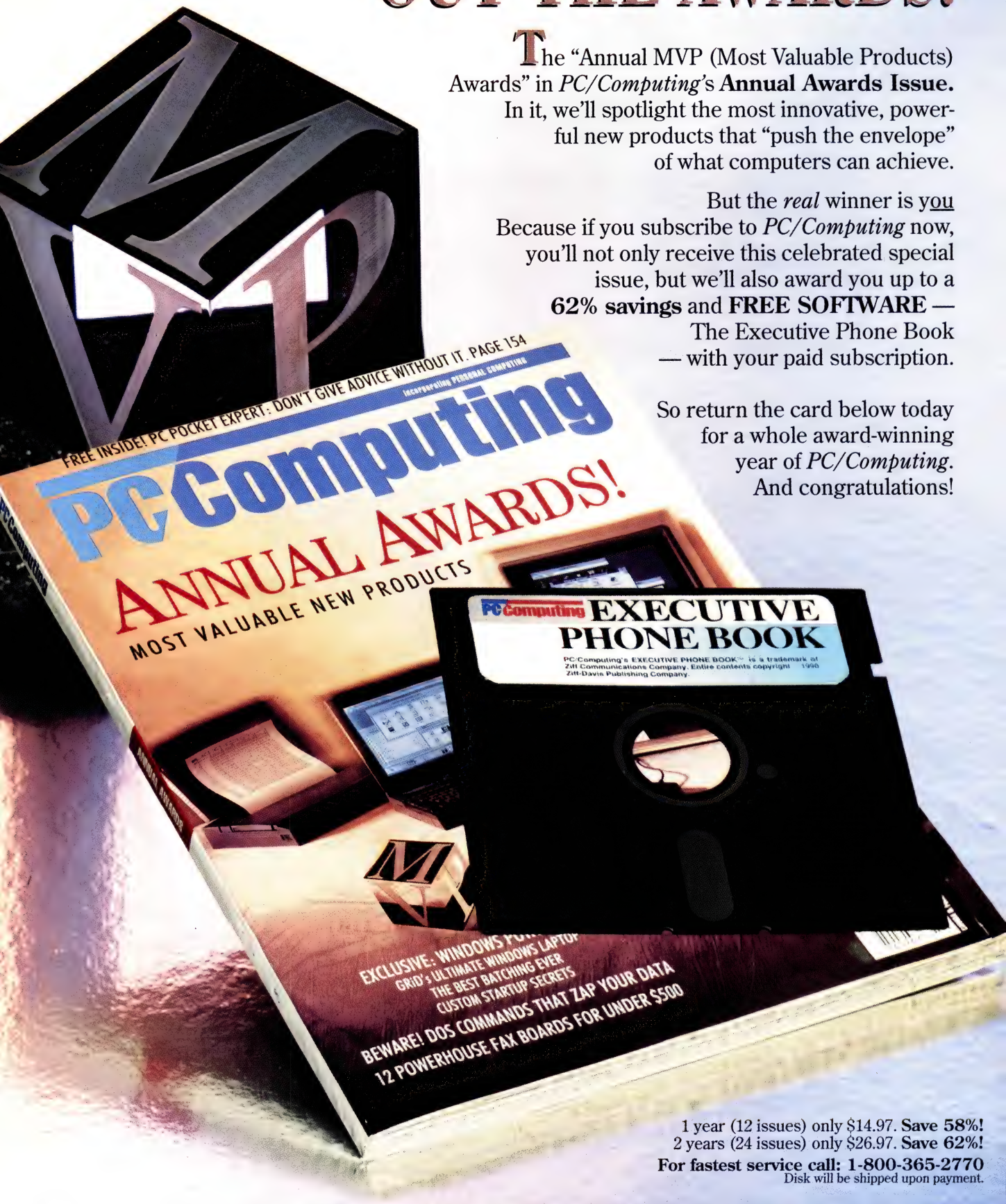

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Six Two-Page Grayscale Monitors

Dual-Page Monitors That Display Amazing Grays

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BY WENDY TAYLOR

IT'S ALMOST UNTHINKABLE these days to consider anything but a color 14- or 17-inch monitor for everyday desktop applications, but sometimes black and white is better. Move up to a two-page 19-, 20-, or 21-inch display for desktop publishing or image processing, and it often makes sense to opt for a dual-page grayscale monitor over color. Unlike monochrome VGA monitors that display only in simple black and white, high-end grayscale monitors use shades of gray to represent different colors.

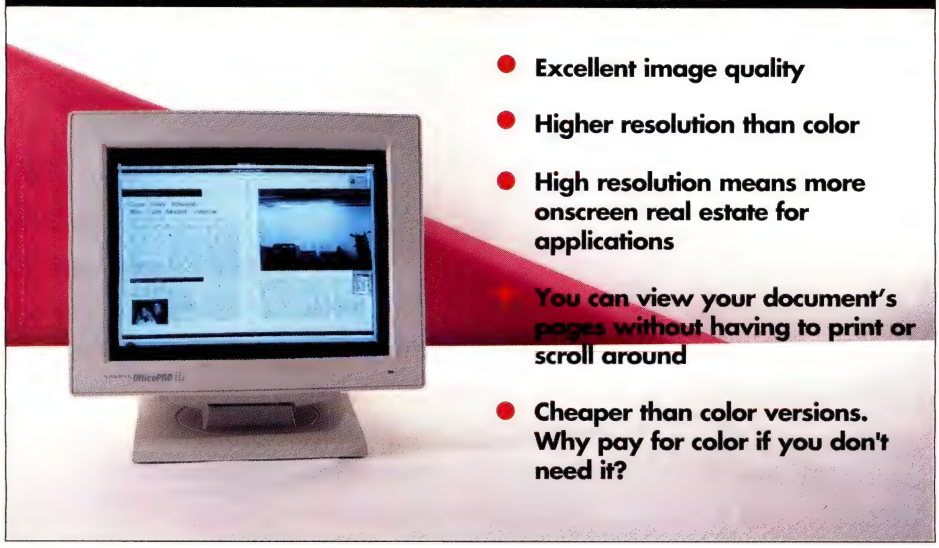
Grayscale monitors offer several advantages over their color equivalents, including lower cost, higher resolution, and generally better image quality. For less than the cost of a top-of-the-line two-page color monitor, you can get a top-notch dual-page grayscale monitor and adapter. Dual-page grayscale monitors (and their adapters) range in price from $1,800 to $2,700, compared with the $3,000 to $5,000 or more you can pay for 20-inch color monitors (and the price of the color monitor doesn't include the $500 to $2,000 or more you'll have to spend for the higher-resolution adapter you need to take advantage of the larger display).

In the bargain, you'll also get higher resolutions than you can get in color. Unlike color monitors, which typically support resolutions of only up to 1,024 by 768 pixels (a few more-expensive monitors now support 1,280 by 1,024), some grayscale monitors support resolutions of up to 1,600 by 1,280, which translates into more onscreen real estate for your applications.

The increased resolution also means that images are much finer and sharper than anything a color two-page monitor can display. Whites are also typically brighter, which means less eye fatigue, something that's especially beneficial for designers and publishers who spend lots of time working in front of the screen. In short, working with a good grayscale monitor (also called a paperlike or paper-white display) can be as easy on the eyes as working on paper.

Grayscale monitors truly excel at desktop publishing. For designing, laying out, and previewing full-page documents and two-page spreads *onscreen*, grayscale monitors cut down on the time you spend waiting for the screen to redraw, and eliminate the need to continually print to see page layouts. Particularly in a graphics environment such as Windows, a larger display makes it easier to view your whole document or layout screen without scrolling around and waiting for the screen to redraw the image.

SOME ADVANTAGES TO GRAYSCALE MONITORS



- Excellent image quality
- Higher resolution than color
- High resolution means more onscreen real estate for applications
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While grayscale monitors have by far the largest following among the desktop publishing crowd, they have other uses as well, such as CAD and document image processing (retrieving scanned or archived documents and images for viewing).

When shopping for a grayscale monitor, it's important to buy the graphics adapter at the same time to ensure compatibility. Because of the different video resolutions they support, page displays require special video controllers and drivers—and compatibility problems abound. Some companies bundle the monitor and adapter, but others don't. Even if the two are sold separately, buy them together to ensure compatibility since some of these monitors will work with only one or a small handful of controllers.

Because no standards exist for the higher resolutions at which grayscale monitors run, the monitors and adapters require special drivers for different applications. Make sure the adapter includes drivers for the applications you use. Drivers commonly included are those for Windows 3.*x* (which includes all Windows applications such as PageMaker), Ventura Publisher, AutoCAD, or even 1-2-3, for example. Most of the monitors have drivers for several different resolutions and shades of gray, depending on your application.

If the display will serve as your only monitor, make sure it also supports standard VGA for applications that don't have a special driver. If you also want to run a color monitor for your other applications, a few video adapters such as those from Radius, Sigma, and Sampo have an onboard VGA chip that lets you hook up two monitors to the adapter; you can then switch back and forth between color on your VGA display and the higher resolutions of the grayscale monitor. Others, such as Cornerstone, allow you to have a separate VGA board installed and then switch between monitors with commands.

A grayscale monitor and adapter that will support 256 shades of gray can display photographic-quality images, while 16 shades of gray are adequate for previewing and placing a photograph in a desktop publishing document, for example. With fewer than 16 shades of gray, complex grayscale images such as photographs will be difficult to distinguish. Simple black-and-white line art doesn't require multiple levels of gray. Cards that support more shades require additional memory on the video card and typically cost more.

We assembled six noninterlaced dual-page grayscale monitors with 19- to 21-inch displays that support resolutions of 1,280 by 960, 1,280 by 1,024, or greater and that support at least four levels of gray; we put them through their paces, and compared image quality. We also collected tips on installation and use that we discovered during our tests and from the manufacturer. All prices include the adapter.

Features we took into consideration when looking at large-display grayscale monitors were:

1 INSTALLATION. Grayscale monitors aren't simple plug-and-play devices; you have to monkey with the video adapter and install drivers. The process took minutes with some of the monitors we looked at, but in other cases it took hours or even days. In this evaluation, we considered the quality of the help the manufacturer includes (such as utilities and thorough, accurate documentation) to make the installation as painless as possible.

A few tips that hold for installing any grayscale display: Check the manual to your system to see if you need to set jumpers on your motherboard to switch from color to monochrome. In some cases, you'll need to reconfigure your system's CMOS for a monochrome display as well.

If you use a memory manager such as QEMM, be sure to configure the memory manager so that it doesn't try to load device drivers into the portion of memory reserved for monochrome displays. Unless it is instructed otherwise, QEMM assumes you're using a color display.

2 IMAGE QUALITY. We took several factors into account when we reviewed the image quality of the different displays. First, we measured the actual diagonal length of the onscreen image (a 20-inch monitor, for example, might display only an 18-inch image). We also considered some subjective criteria, such as sharpness of images and text, and brightness in all resolutions and at all levels of gray.

Flicker was another consideration. A display's flicker or wavering of an image (it's particularly noticeable on a white background) reduces contrast and makes text difficult to read. We also excluded monitors that use a technique called interlacing. Interlaced monitors are typically less expensive than noninterlaced ones, but they also flicker, since these monitors redraw only every other horizontal line to refresh the onscreen image. Although some people are more sensitive to flicker than others, if the monitor's vertical refresh rate (which indicates how often the onscreen image is redrawn) isn't at least 65Hz, you'll probably notice flicker.

We used several files to perform these tests, including a two-page spread in PageMaker and several scanned grayscale images to judge the monitor's clarity. We also performed these tests at all the monitor's resolutions and levels of gray.

3 ERGONOMICS. Ergonomics is related to image quality. Since working in front of a monitor for long hours can be draining, it's important to be able to adjust the monitor to ambient lighting conditions. All of the monitors have a tilt and swivel base, and most have contrast and brightness controls. Some also allow you to adjust horizontal and vertical image size and positioning (which can shift as the monitor ages).

We also looked at whether the monitor produced glare, a factor that can affect your comfort. Finally, we noted which of the monitors conform to the newest Swedish low-emissions standard (called MPR 2).

4 DRIVERS. All of the displays we looked at had to have a Windows 3.0 driver in at least one resolution (some included several). The Windows drivers often include system fonts that affect the appearance and size of icons and text in title bars, menu bars, and Program Manager but don't affect the fonts within applications. Most of the monitors/adapters we looked at also include several other drivers for DOS applications such as AutoCAD, Ventura Publisher, or 1-2-3.

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Cornerstone DualPage 120

(1) **INSTALLATION.** Installing the Cornerstone DualPage 120 was a snap; we were up and running within minutes. The monitor ships with an excellent installation guide and includes a software utility that installs the necessary drivers and configures the monitor and board to work with your system. The configuration utility allows you to set the levels of gray (from 0 to 16) and includes a screen saver. The documentation is also filled with tips on how to optimize the drivers for applications. One helpful tip: Create the target directory for the drivers before running the installation program. Otherwise, follow the manual and you can't go wrong. The DualPage 120 works only with Cornerstone's adapters.

The DualPage 120 displays such exceptional images, you might not even miss color.

(2) **IMAGE QUALITY.** Image quality on the Cornerstone is so good you might not even miss color at all, even in Windows. The bright phosphors make for high-contrast images with crisp tones and lines. The 1,600-by-1,280-pixel resolution on the 19-inch display (actual image size was 18⅛ inches) gave us plenty of room to display two pages of legible text onscreen in PageMaker's Fit-to-Window view. Six-point type was sharp and legible, and there was no distortion around the edges of the image. The Cornerstone DualPage 120 showed no perceivable flicker and at 76Hz had one of the highest refresh rates for monitors in this class.

The DualPage 120 supports 16 levels of gray with 1MB of memory on the video adapter, has 4 levels of gray with 512K, and is strictly monochrome with 256K. For the best image quality, opt for 1MB.

(3) **ERGONOMICS.** Analog brightness and contrast knobs are located on the front of the monitor. Unlike most of the other monitors we looked at, the Cornerstone also has rear controls for adjusting image size and horizontal and vertical position. You'll need a special tool that Cornerstone includes with the display to make the adjustments.

Optional antiglare coating and MPR 2 low-radiation compliance are available for an additional $275.

(4) **DRIVERS.** The DualPage 120 comes with drivers for a long list of applications including Windows, AutoCAD, 1-2-3, OS/2, WordPerfect 5.1, Ventura Publisher, and Symphony.

Timesaving tip. Install the hardware (board, cables, and monitor) first, then load the drivers.

Strong suit. The Cornerstone DualPage 120's bright, sharp, flicker-free image is ideal for those who must spend long hours gazing at the monitor. The Cornerstone comes with an extensive list of drivers.

Shortcoming. More expensive than some of the other grayscale monitors. The monitor supports only 16 levels of gray, adequate for viewing and placing photographic images, but not for editing them.

Wrap-up. Although it's pricier than some of the monitors we looked at, the DualPage 120 is well worth the $2,495 price tag. The Cornerstone had the sharpest, brightest image of all the monitors we looked at and was painless to install. Get a full 1MB of video memory for 16-gray-level support.

Hyundai HMM-1900

(1) **INSTALLATION.** Installing the Hyundai took us several hours. The monitor and adapter card manuals were both printed in 1989 and weren't always helpful during installation. Drivers for running Windows in Enhanced mode weren't included with the monitor, which meant that we had to download the latest drivers from the company's BBS—a process that took nearly half an hour at 2,400 bps (the call wasn't toll free, either). The install program also failed to add the proper device driver to our CONFIG.SYS file, so we had to do it manually. The Hyundai HMM-1900 will not work with third-party adapters.

(2) **IMAGE QUALITY.** The HMM-1900's phosphors have a greenish cast that makes blacks appear dark green and gives whites a pale green hue. The images were also somewhat pincushioned and faded around the edges. Onscreen image size for the 19-inch display is only 17¾ inches.

The monitor supports 16 levels of gray at 1,280 by 960, which means higher resolution from the Hyundai than standard VGA, but this isn't as high as what other grayscale monitors can deliver. This also meant that in *spread,* or two-page, view in PageMaker, the text in the Fit-to-Window view was nearly impossible to read; we could read all the text only when it was shown at actual size (when one 8½-by-11-inch page was onscreen). The monitor supports 16 levels of gray, but the images it displays are muddy and hard to discern. With a 64Hz refresh rate, flicker is barely perceptible.

(3) **ERGONOMICS.** Although Hyundai claims that the tube is antiglare treated, you can see your reflection clearly in the HMM-1900's display. If you are sensitive to glare, you will find the reflections annoying. The monitor comes with only an analog brightness control (no contrast knob) for adjusting image quality, and it's inconveniently located on the back of the monitor.

Hyundai's HMM-1900 monitor is inexpensive, but image quality could be better.

(4) **DRIVERS.** The HMM-1900 includes drivers for Windows, GEM/3, Ventura Publisher, AutoCAD, AutoSketch, AutoShade, 1-2-3, Symphony, WordPerfect, and WordStar.

Timesaving tip. Make sure the proper drivers are included when you buy the monitor.

Strong suit. At $1,788, this monitor is relatively inexpensive.

Shortcoming. The highest resolution supported by the Hyundai is only 1,280 by 960, the installation process was complicated, and the HMM-1900's dim dis-

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play has only a rear brightness control knob (no contrast control) for adjusting image quality.

Wrap-up. The HMM-1900 loses points for its dated manuals and the missing Windows 3.0 driver that we had to download from the company. While the Hyundai monitor is about $700 less expensive than the Cornerstone and is adequate for laying out (but not editing text in) two-page spreads, the dim display, the monitor's glare, and the lack of easily accessible image adjustments make this monitor hard to recommend for prolonged use, editing text, or viewing grayscale images.

Radius TPD/21

(1) **INSTALLATION.** Of all the monitors we evaluated, the Radius TPD/21 was the easiest to install. The manuals were so clear and thorough that even a novice could navigate installation.

The video card features an onboard VGA chip and a second connector for hooking up a VGA color display and running it off the same adapter simultaneously. The TPD/21 has a handy installation utility that runs under Windows for configuring the display or changing drivers. The TPD/21 works only with Radius video adapters and also runs on Macintosh computers.

Good image quality at a competitive price makes the Radius TPD/21 a suitable choice.

(2) **IMAGE QUALITY.** The TPD/21 has bright bluish phosphors and displays dark blacks and bright whites. The 63Hz refresh rate in the highest resolution makes for some flicker in an all-white background, but the effect is minor. The 21-inch monitor has an onscreen image size of 19¾ inches. The monitor supports resolutions of 1,280 by 960 and 640 by 480. It displays only in monochrome at 1,280 by 960 but supports 16 shades of gray at 640 by 480.

Although other monitors that support 1,280 by 960, such as the Ventek AT 2000, couldn't display a legible dual-page view in PageMaker, the TPD/2 managed the task well.

(3) **ERGONOMICS.** The Radius monitor has front-panel knobs for adjusting brightness and contrast. The polished glass display tube emits some glare.

(4) **DRIVERS.** The TPD/21 includes drivers for Windows, Ventura Publisher, GEM, 1-2-3, AutoCAD, VersaCAD, Microsoft Word, Publisher's Paintbrush, WordPerfect, and OS/2, among others.

Timesaving tip. Since the board supports both a standard VGA monitor and the dual-page monitor, you can bring an image in on the VGA display and edit it, then bring it over to the high-resolution display to import it into the document and save it.

Strong suit. Good image quality and relative affordability. Onboard VGA on the adapter lets you run a color VGA display from the same adapter for standard applications that don't require (or support) the dual-page monitor.

Shortcoming. Supports 16 shades of gray only in standard VGA (640 by 480) resolution; it's strictly monochrome in 1,280 by 960.

Wrap-up. The Radius TPD/21 monitor and board are an excellent choice if you use a standard VGA color monitor but also need a dual-page display and don't need grayscale support in the highest resolutions.

Sampo OfficePro IIa

(1) **INSTALLATION.** Installing the Sampo OfficePro IIa proved tricky since we had to change the default jumper settings on the adapter during installation. While the manual for the monitor is adequate, the manual for installing the video adapter and drivers is as dense as a textbook and was not always helpful. If you read the entire manual, installation could take hours. After 40 minutes, we called tech support and a technician helped us install the board.

Like the adapter for the Radius TPD/21 and others, the OfficePro IIa's adapter has a standard 15-pin VGA connector for running a color VGA monitor from the video adapter as well.

(2) **IMAGE QUALITY.** Image clarity on the Sampo was generally good, although not as sharp as that on the Cornerstone monitor. At the monitor's maximum resolution of 1,280 by 1,024, however, the text of our spread was impossible to read onscreen in PageMaker's Fit-to-Window view. Even headlines on the spread were illegible. Image size on the 19-inch monitor was 17¼ inches.

Despite its clear images, Sampo's OfficePro IIa is impractical for desktop publishing.

The OfficePro IIa supports resolutions of 1,280 by 1,024 (with 16 levels of gray) and 640 by 480, which is standard VGA (with 256 levels of gray).

(3) **ERGONOMICS.** The OfficePro IIa had the best image controls of all the monitors we looked at. Contrast and brightness knobs are located toward the front of the monitor on the right side, and horizontal and vertical knobs are located on the left. Glare was not a problem on the OfficePro IIa.

(4) **DRIVERS.** The OfficePro IIa includes drivers for AutoCAD, GEM, Ventura Publisher, Windows, WordPerfect, and several other applications.

Timesaving tip. Check the READ.ME file on the driver disks before installation; it's full of helpful tips for setup.

Strong suit. Clear, well-focused image and well-designed image controls. Least expensive monitor in its class at $1,695.

Shortcoming. The highest resolution supported is 1,280 by 1,024, not ideal for two-page layout.

Wrap-up. Image quality on the OfficePro IIa was good although not outstanding. Installation was complicated, and once it was complete, we occasionally had problems with the Windows drivers. Despite the good image clarity and relatively low price on the OfficePro IIa, the monitor's

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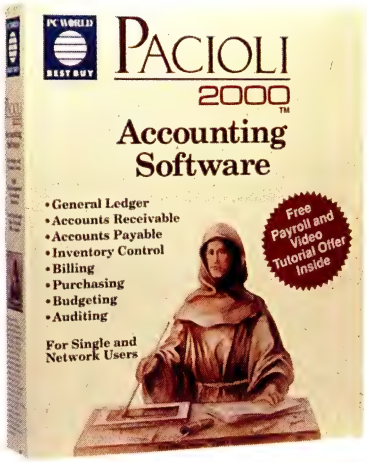

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System Requirements • IBM® PC/XT™, AT®, PS/2® or other fully compatible computer • 640K RAM • DOS 3.1 or higher • CD-ROM drive with CD-ROM extensions for Microsoft® MS-DOS® (Version 2.0 or higher).

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maximum resolution of 1,280 by 1,024 means you can't read text onscreen in the two-page view, making it an impractical choice for desktop publishing operations.

Sigma MultiMode 120

(1) **INSTALLATION.** Installation for the MultiMode 120 was relatively straightforward and the illustrated documentation is easy to follow. Like the Radius TPD/21, the Sigma MultiMode can be configured to run as a primary display or the onboard VGA chip will run a standard VGA monitor off the same card as well. You can use the VGA card already in your system by disabling the MultiMode adapter's integrated VGA chip. The MultiMode includes a video utility that installs in Windows and provides an easy menu for selecting video modes. The MultiMode 120 does not support third-party adapters.

The MultiMode supports resolutions of up to 1,664 by 1,200, and image quality is sharp.

(2) **IMAGE QUALITY.** The MultiMode 120 uses a yellowish pixel that's not as bright as the bluer pixel on displays such as the Cornerstone. The blacks are jet black, however, and the image quality is crisp. Actual image size on the 19-inch display is 17¾ inches. The 76Hz (and higher) refresh rate makes for a stable, flicker-free image.

(3) **ERGONOMICS.** The sharp display on the Sigma is comfortable enough to work in front of for long hours. Sigma also claims that the monitor meets the newest Swedish MPR 2 low-emissions guidelines. The monitor features front-panel brightness and contrast controls, with horizontal and vertical centering controls in the rear. Also in the rear is a screen rotation adjustment (for adjusting an image that appears tilted). The MultiMode 120 emitted no noticeable glare.

(4) **DRIVERS.** The Sigma MultiMode 120 includes drivers for AutoCAD, GEM, OS/2, 1-2-3, Windows, Microsoft Word, Ventura Publisher, and WordPerfect, among other applications. It supports resolutions of 1,664 by 1,200 (4 levels of gray) and 1,280 by 960, 1,024 by 768, 832 by 600, 640 by 480, and 512 by 384. The best way to choose the proper resolution for an application is to experiment.

Timesaving tip. The 1,664 by 1,200 resolution is excellent for text-intensive applications; you can squeeze 132 columns by 66 lines (compared with the standard 80 by 25 in VGA) onscreen.

Strong suit. Good image quality and an extensive list of drivers. The Windows utility makes it easy to test and switch resolutions on the fly (the zoom feature). It supports the latest Swedish MPR 2 low-radiation guidelines.

Shortcoming. The Sigma MultiMode 120 displays only four levels of gray at its highest resolution. Work around this limitation by editing grayscale images at VGA resolution (the adapter supports 256 shades of gray at 640 by 480) or by using a separate VGA monitor that's attached to the same adapter and moving the images to the grayscale monitor for layout.

Wrap-up. The image quality on the Sigma was sharp and bright, although not as crisp as that of the Cornerstone DualPage 120 and about the same as that of the Radius TPD/21. While the Sigma MultiMode 120 has much to recommend it, the Radius TPD/21 has a larger display area (21 inches versus 19 inches), is easier to install, and is more than $400 cheaper at $2,018.

Ventek AT 2000

(1) **INSTALLATION.** Installation of the Ventek AT 2000 took less than half an hour. The clear documentation included tips for installation. The Ventek AT 2000 doesn't require you to change your CMOS to a monochrome display during setup; the adapter appears as a standard VGA adapter to your system. The video card will also drive a standard VGA monitor, though you'll have to unplug it to run the Ventek AT 2000. The video card can also be configured to drive a standard VGA monitor, though applications will not be displayed simultaneously on the color and monochrome monitors. Unlike the other monitors we looked at, the Ventek AT 2000 has two cables running from the monitor to the video card; you'll want to make sure both are connected before you turn on the monitor.

(2) **IMAGE QUALITY.** The AT 2000 has greenish pixels that make blacks appear dark green. Whites are not very bright and appear blurred when the brightness knob is at its highest.

The AT 2000 supports resolutions of 1,280 by 960 (63Hz refresh), 1,280 by 896 (67Hz), 1,280 by 856 (70Hz), 640 by 400, and all standard VGA modes. It's a monochrome display, however, at the highest resolution—you'll have to drop down to 640 by 400 and VGA modes for 64 levels of gray. At 1,280 by 960, resolutions start to lose detail. Even with the higher refresh rates, there's some flicker, particularly in standard VGA. The main problem with the AT 2000, however, is that you can't read the text displayed in a dual-page spread in PageMaker's Fit-to-Windows view. Image size on the 19-inch monitor is a mere 16½ inches—about what you get from many 17-inch monitors.

(3) **ERGONOMICS.** The Ventek includes front-panel analog brightness and contrast knobs. It has no problems with glare.

(4) **DRIVERS.** The Ventek AT 2000 includes drivers for Windows, GEM, AutoCAD, WordPerfect, Microsoft Word, OS/2, Lotus 1-2-3, and Publisher's Paintbrush, among others. All applications are supported in standard VGA if a specific driver is not included.

Timesaving tip. Use the 640-by-400 mode that supports 64 levels of gray for editing and viewing images.

The AT 2000 is a monochrome monitor at its highest resolution of 1,280 by 960.

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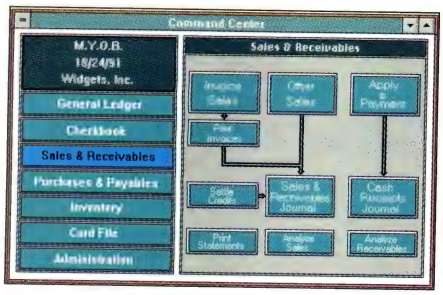

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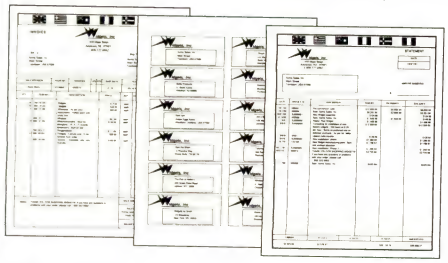

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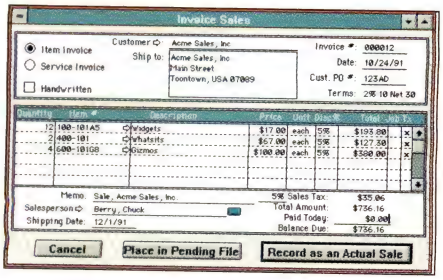

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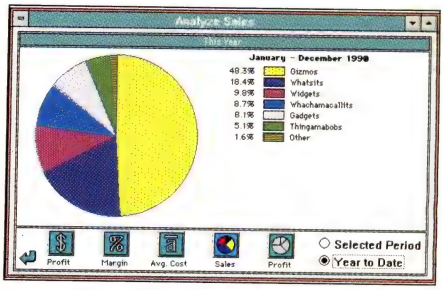

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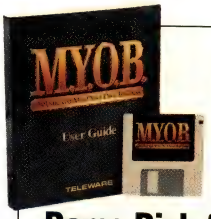

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Microsoft conducted its largest beta test program ever to ensure everything works perfectly in Windows 3.1—you decide if Microsoft succeeded. Read about Windows 3.1's best features, the ten features that are still missing, and performance tests that compare speeds of Windows 3.0's File Manager, Print Manager, and video capabilities with those of Windows 3.1. Plus, tips for optimizing 3.1 performance, hints for using Windows on your laptop, and ATM vs. TrueType. We give you all the elements you need to make a decision.

Preventive PC Medicine

Like an old car, PCs can fail you at precisely the wrong time. You wouldn't get stuck on the freeway with a flat tire and no jack, would you? Likewise, if you're smart, you don't work on your computer without having a system backup handy. We'll tell you of other precautionary steps to take: buy a surge protector, create an emergency disk, and virus-proof your system, just to name a few. Change your oil every 3,000 miles, and maintain your PC, too—it's just common sense.

The Ultimate Motherboard

In our ongoing "Ultimate PC" series, Executive Editor Ron White continues to look for ways to push the performance of his unbelievable PC. Next month, he'll upgrade the STEP Megacube's 486/33 motherboard to a 50MHz model. Stay tuned.

Modems for the Road

Does your work keep you on the move? Do you need an easy way to keep in touch with the office? Portable modems provide many advantages over desktop modems and modem boards. We'll discuss features to look for when buying one—including protocols, speed, power sources, and fax capabilities. We'll also review a sampling of some of the portable modems on the market.

Plus . . . How to make a discriminating choice when buying a color printer, some amusing responses from fiercely loyal word processor users, how to make professional-looking typographic characters, and how to work with six low-end desktop publishing programs.

Strong suit. The Ventek AT 2000 is VGA compatible.
Shortcoming. The Ventek AT 2000 is monochrome at high resolutions, and the image quality in all resolutions was out of focus.
Wrap-up. While the VGA compatibility is handy, the Ventek loses points for a small image, flicker, and lack of gray-scale support in higher resolutions—all features you'd expect considering the steep $2,695 price tag. For $200 less, the Cornerstone offers better image quality and higher resolutions.

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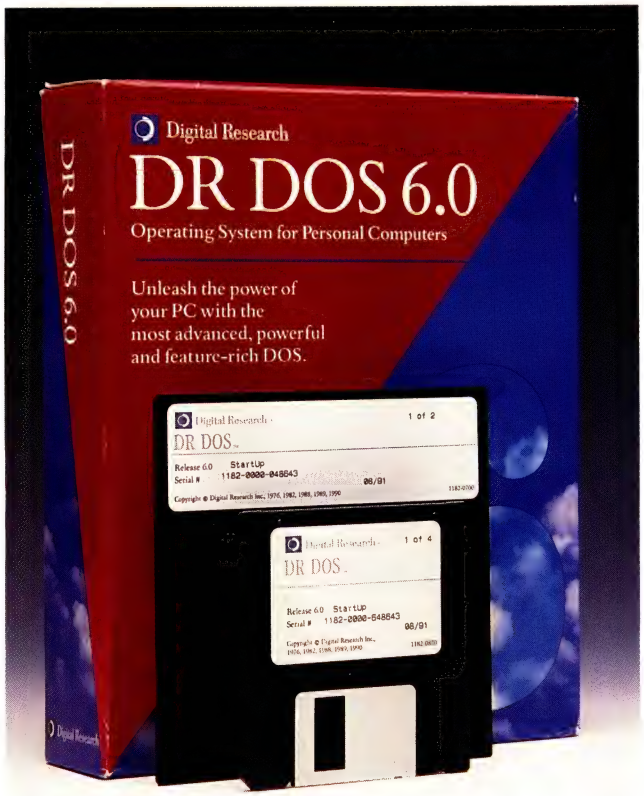
DR DOS VERSION 6 VS MS-DOS VERSION 5

DR DOS DOMINATES!

REVIEWER'S NOTEBOOK: *Number two tries harder. If you want to run your DOS, Windows and networking applications faster and easier, while maximizing your hard disk's performance, Digital Research has the answer: DR DOS 6.0. InfoWorld awarded DR DOS 6.0 its Buyer's Assurance Seal, eclipsing MS-DOS 5.0 and virtually running away with the scoring. High marks everywhere for this software masterpiece, particular superiority in disk management, task switching and Windows support.*

The new MemoryMAX feature moves DR DOS, buffers, drivers, TSRs and network software outside your 640K, leaving DOS, network and Windows plenty of elbow room. The more powerful your machine, the more memory you'll reclaim. For us, this was the most compelling feature. We also applaud DiskMAX, a collection of unmatched disk utilities: disk optimization, compression and state-of-the-art disk caching. All integrated, all ready to use. TaskMAX, another advanced feature, allows you to load up to 20 applications at a time — then switch from one to another instantly. Cut and paste between these applications. TaskMAX automatically switches to extended or expanded memory; switching between programs is instantaneous. Extensive testing proves that DR DOS 6.0 clearly outperforms MS-DOS 5. It's the disk operating system that Microsoft doesn't want you to know about...



DR DOS 6.0 is DOS without the drawbacks, designed specifically to overcome the flaws that MS-DOS users have complained about from the beginning. And while MS-DOS 5 has come a long way, it's still not as fast, as easy or as rich in useful features as DR DOS.

InfoWorld and *BYTE* agree. DR DOS 6.0 brings a new level of memory management to the disk operating system, taking full advantage of high and upper memory — even on PCs and XTs. You'll get up to 627K on i386 and i486 machines (up to 629K on 286s, and 8086/8088 machines will see up to 621K). MS-DOS 5 still requires a memory manager to perform competent loading and memory enhancement.

Enjoy up to double the hard disk capacity with the new DiskMAX utilities (including defragmentation) and a dramatic increase in speed with DR DOS's high-performance caching. A note here: DR DOS 6.0 includes SuperStor as part of its DiskMAX utility collection. SuperStor increases the storage capacity of your hard disk with advanced file compression technology. Unlike conventional file compression software, Superstor employs sophisticated "on-the-fly" compression algorithms to expand the storage capacity of your drives (hard disk or floppy) by up to 300% — and in many cases more! You can store 2 to 3 times more on your hard drive without giving up the speed with this new technology. Now your 40 Mb drive can store 80-120 Mb. As a standalone product Superstor is a $119.95 value!

And with DR DOS, you can instantly recover deleted files, include password protection for files, directories, disk partitions and the system itself. The ViewMAX Graphical Shell provides an easy point-and-select interface for access to DR DOS functions, data and applications. The handy FileLINK quickly moves files from PC to PC via a serial cable. And the full-screen text editor includes a set of word processing tools that are always at your disposal.

MemoryMAX Advanced Memory Management

DR DOS 6.0 is the only operating system that can move TSRs, buffers, drivers, networking software, and the operating system itself outside of the conventional 640K memory area on 8086/8088, 80286, i386, and i486-based PCs. The result is more memory for your DOS, Windows, and networking applications:

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- Up to 621K on 80286 systems with LIM 4.0.
- Up to 628K on 80286 systems using the NeAT, LeAP, or SCAT chipsets.
- Up to 627K on i386 and i486 systems.

DiskMAX Disk Optimization

At your option, DR DOS 6.0 uses dynamic file compression technology to compress hard disk partitions, resulting in a potential doubling of the data capacity of the typical disk partition. Once installed, disk compression is fully automatic and transparent — the only difference you'll see is a dramatic increase in available hard disk space.

DR DOS 6.0 defragments hard disks by gathering together parts of files that have become scattered over the disk as a result of typical PC use. When files are stored in contiguous blocks instead of being fragmented, your applications take less time to read and write to your hard disk — resulting in faster performance.

DR DOS 6.0 dramatically boosts the performance of DOS and Windows 3.X applications with the industry's leading high-performance disk caching program, Super PC-Kwik. Disk caching saves valuable time by storing data frequently used in memory, thereby reducing the need for programs to retrieve data from disk.

TaskMAX Task Switching

TaskMAX lets you load up to 20 applications at the same time, quickly switch between tasks, and copy and paste text and numerical data from one to another. You can run TaskMAX from the ViewMAX graphical shell or from the command line. TaskMAX can also be located outside of conventional memory, thereby maximizing the memory space available for each of the tasks being switched.

Unlike other task switchers, TaskMAX switches tasks by using extended or expanded memory, a virtual disk, or a hard disk — resulting in the fastest switching possible. Because most users will routinely want to switch between the same tasks, TaskMAX can automatically preload a specified list of tasks at startup time.

Security Features

DR DOS has several levels of security to safeguard your system and data, including power-on password protection; temporary keyboard locking; and password-protection partitions, directories, and files. For maximum flexibility, access to password-protected files and directories can be provided at different read/write/delete privilege levels.

Data Recovery

With DR DOS 6.0, information that once would have been lost is easy to recover. When a file has been accidentally deleted, "undelete" lets you recover it, even after intensive disk use, by reserving the space occupied by deleted files until a disk is filled up.

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The Fast, Easy Typeface Enhancement Program For Windows!

REVIEWER'S NOTEBOOK: *If you're into desktop publishing, or work extensively with a word processor, chances are you've got all kinds of fonts that you've purchased from different sources. Here at Tiger, we've got hundreds of fonts from different manufacturers: dozens of Agfa Compugraphic fonts, a slew of Adobe fonts, scores from Digital Typeface Corp., Nimbus Q and of course True Type. Then we've got some Bitstream fonts and some others that we never use for one reason or another. We've got quite a library, but we've also got a problem: these fonts are all in different formats. There's PostScript Type 1 (Adobe, Digital), PostScript Type 3 (Bitstream Fontware), and Intellifonts (HP and Agfa). FontMonger is the answer. It allows us to convert all of our various-format fonts in either direction to any other format! Our readers have been clamoring for just such a capability — now it's here.*

But that's just the beginning our our love for this amazing new product. FontMonger also allows us to actually modify existing typefaces to produce an unlimited array of customized new faces for use in virtually any publishing or graphics application. How about this: You'll have access to unencoded characters (some of which we never knew existed) and have the unique ability to produce custom small caps and oblique characters, superscript and subscript characters, along with bar and slash fractions. Business users will love FontMonger's ability to create frequently used fractions or superior numbers (like pricing) and place them directly into a font. Take a regular typeface and instantly transform it into an oblique face or true small caps of any slant or size. FontMonger is one of the most useful — and fun — typographic tools we've ever seen, a must for type aficionados.

The Windows 3.1 Type Dilemma

With the introduction of Microsoft Windows 3.1, users will be introduced to full-scale use of True Type. True Type's debut came in Apple's System 7. Today, as PostScript and True Type become the leading page and type description languages, many other type formats are left in the dust. That's why FontMonger is such an important product. It protects your investment in fonts by allowing complete conversion of anything you've got — to any other format. These converted fonts can be exported in Encapsulated PostScript (EPS) or Adobe Illustrator file formats, as well as Windows Metafile, so outlines can be modified in CorelDraw, Micrographx designer and a host of other graphics applications. Graphics and type can then be combined and merged back into a font.

Conversions are fast and simple, just select the typeface and click on the format you want it converted to — FontMonger does the rest. That's it. And the typefaces produced by FontMonger are compatible with all applications that run under Windows 3.0 or 3.1, as well as Adobe Type Manager, Intellifont for Windows, CorelDraw, ZSoft SoftType, GeoWorks Ensemble — even the Macintosh, NeXT and PenPoint operating systems. How's that for versatility?

FontMonger was developed by a group of experienced typographic specialists who saw the vast incompatibilities between type formats, and who were themselves frustrated by the inability to use some of their fonts in many of their applications. They set out to create a conversion that would allow any type to be used anywhere. For the record, you can convert (in either direction) fonts by Adobe, Agfa Compugraphic, Bitstream, Casady & Greene, Digital Typeface Corp, Hewlett-Packard, Image Club, Linotype-Hell, Monotype, Nimbus Q, True Type, URW and ZSoft.

Customize Like Crazy!

...Combine characters from various type families into a single font! Have instant access to frequently used characters right from the keyboard! Create customized small cap and oblique characters to your exact specifications — you select the height and width proportions and the degree of slant! Want more? Create inferior and superior characters for mathematical and scientific formulas, advertisements, pricing guides and dozens of other specific uses. Every custom character you create can be installed quickly into a font.

With FontMonger, you have complete control of your type to open a world of creative possibilities.

Questions, Anyone?...

Why convert fonts?

With the forthcoming release of Windows 3.1 from Microsoft, users will have the option of working with TrueType fonts directly in their operating system. Instead of having to purchase new fonts to work with TrueType-supported applications, FontMonger lets you simply convert your existing type library into TrueType format.

Why FontMonger?

PC users who are word processing, desktop publishing and presentation applications can benefit from FontMonger's unique ability to mix typefaces within a single font. In addition, fractions can be generated in a specific typeface and installed directly into your keyboard. The numerator and denominator can be separated by either a horizontal line (en fraction) or a slanted line (em fraction).

What are inferior and superior characters?

Superior and inferior characters are smaller characters above and below the normal character baseline. For example, in the price $99.^{95}$ the .95 consists of superiors. Or, in the chemical formula H_2O, the 2 is an inferior. FontMonger enables you to create composite characters containing both superior and inferior elements. Composite characters become one key position within a font.

My page layout program already creates small caps. Do I need FontMonger?

Most page layout programs substitute a smaller point size for small caps. This is typographically incorrect, since the width and height of the character should be scaled in different proportions. FontMonger automatically modifies the height and width to create a typographically correct small cap. If you want to create unique small caps, simply specify the height and width proportions. FontMonger does the rest.

Does FontMonger do any other type modifications?

FontMonger lets you generate true oblique or slanted characters. Simply set the degree of slant and direction of slant. FontMonger provides an immediate visual sample of the character. The degree of slant can be set in degrees and retained for future use as a preference setting.

What are unencoded characters?

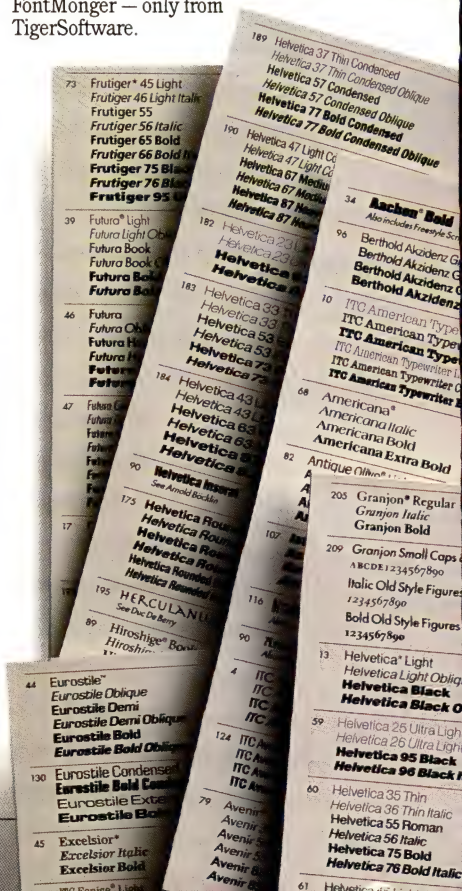
Unencoded characters are extra characters forming part of the original design of the typeface which are not always accessible from the keyboard. Typical unencoded characters include ligatures, fractions, international character accents, punctuation and currency symbols.

FONTMONGER WINDOWS

BBA4083 **FontMonger Windows** **$99.95**

FREE TYPE BOOK! WHEN YOU BUY FONTMONGER

This handy 12-page guide is packed with tips, techniques and jargon. Prepared by typographers at TigerSoftware, this book fills in all the gaps when working with type. It's call "A Short Course on Working with Type," and it's probably the most informative, concise volume on the subject of type ever printed. It's yours absolutley FREE when you buy FontMonger — only from TigerSoftware.



TIGERSOFTWARE To Order Call Toll-Free: **1-800-888-4437**

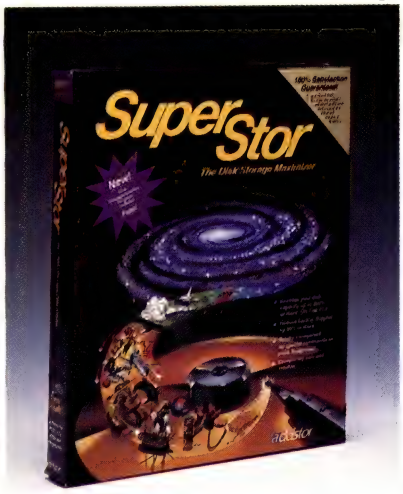
Circle 193 on reader service card.

Increase Your Disk Capacity (On The Fly) By Up To 300%...

This unique product, unlike conventional file compression software, employs sophisticated "on-the-fly" compression algorithms to expand the storage capacity of your drives (hard disk or floppy) by up to 300% — and in many cases more!

SuperStor is simple to install and is 100 percent guaranteed for safety. You don't have to buy any new hardware, fiddle with jumpers, switches, hardware interrupts or even open your computer! Just slip in the diskette and you'll instantly notice significant increases in capacity and speed.

SuperStor is perfect for all applications, including your word processor, spreadsheet, database, graphics and CAD/CAM systems. Specialized applications with highly compressible data can achieve an increase in capacity as much as 8 times — 800%. It supports DOS 3.2 and up including DOS 5.0, Dr. DOS, and Windows 3.0, and allows DOS 3.2 and 3.3 users to easily break the annoying 32 megabyte limitation.



Even with all this high-tech efficiency going on around you, SuperStor does not change the way you work. All compression and decompression occurs without your help. SuperStor's automatic operation eliminates the need to learn special commands or use specially created logic disks. You don't even have to hit one keystroke for this amazing product to work its magic. Just use your computer and applications like you always have.

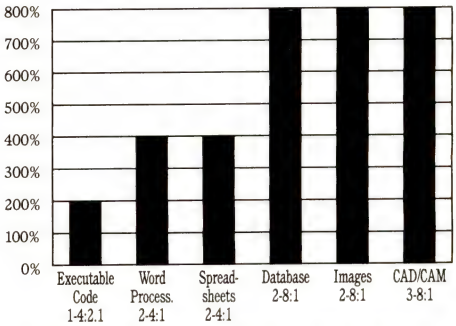
Your Word Processor And Spreadsheet Will Run As Fast As Ever!

SuperStor is the fastest data compression product on the market today, resulting in no measurable loss in your system's overall performance. All of your applications will run just as fast as they ever have. In fact, in some cases SuperStor will actually increase your system speed! SuperStor even includes a caching system that adds additional speed. How's that for power?

A little exploration into the easy-to-understand manual can reap some powerful rewards. For example, with just a couple of keystrokes you can create your own compression configuration. Compress your entire disk, or any portion of it, to maximize ease of use, compression efficiency and overall system performance. In just a few minutes, you can become an advanced SuperStor user.

How Much Space Can I Really Save?

The exact amount of compression you'll achieve depends on the data in the files you store on your computer. Files which use a limited number of characters or contain repeated sequences of characters will compress better than those containing purely random data. While this is true for many compression programs, SuperStor's advanced technology increases storage capacity even more. And SuperStor is the only compression system we've seen that compresses executable code. In addition to compressing the data in your files, SuperStor's ingenious file management techniques saves space on your disk by reducing the number of reserved byte units. Normally, these savings will amount to 4 to 8 times less space on your disk, regardless of the data in the file.



Reduce Time & Cost of Backing Up.

Since your data is now occupying less disk space, you'll find that backups now require less media. In fact, an average savings of 50% on the number of floppies is normal for SuperStor. And, of course, your backups are much faster. In addition, you can write on floppies in compressed mode for backups or, for exchange with other systems, in regular DOS format.

SUPERSTOR

BBA3865 **SuperStor** 5¼" & 3½" **$119.95**
Requires 512K memory.

Stunning Fonts For Your Printed Page.

High Quality Scalable Fonts

Don't just print plain text — fashion creative works of art that bond themselves to the reader. Impress upon the printed page aesthetic, stunning communications that magnetically draw readers to them. This is what professional "Desktop Publishing" is all about. This is what Publisher's Powerpak can do for your word processor.

You absolutely must have Freedom of Font Choice. Whether you print on a dot-matrix, inkjet or LaserJet-compatible printer, Publisher's Powerpak delivers the finest-quality fonts your money can buy.

Why Scalable?

Publisher's Powerpak uses advanced scalable-font technology. When you need a font, you pick a size, and the needed letters are created instantly. The letters are scaled "on the fly" — as you need them. Scalable fonts use virtually no hard disk space — only 50K for an entire typeface family, which includes every size you'll want.

I used to use old-technology fonts (before the new scalable fonts came out). I had only 7 different typefaces. Each typeface had five sizes: 12, 14, 18, 24 and 36 point. My limited selection of fonts took up 10 megabytes of hard disk space!

Now I use Publisher's Powerpak. I have over 114 different typefaces to choose from. In any size I want, from 4 to 1,000 points (Word and Works limits point size to 127). With this seemingly unlimited selection of font choices, I actually use only 1⅓ megabytes on my hard disk. If I wanted this selection with bit-mapped fonts, I'd have to buy a 200 Mb hard disk!

Quality Fonts

Not all fonts are created equal. There are cheapies out there that print jagged letters and have strange character-spacing. That's why you want to stay with the choice of the pros. PC World recently declared Publisher's Powerpak the "Best Buy" of font software, and gave Powerpak's printer and screen fonts the highest quality rating — Excellent.

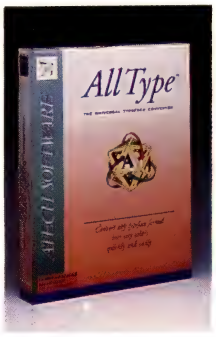
Super Font Pack, Volume 1 FREE — with every Publisher's Powerpak! A $150.00 value — FREE! 84 typefaces in normal, bold, italic, bold italic, thin, condensed, wide, expanded, and hollow.

Add-on Font Packs

Publisher's Powerpak includes 30 typefaces for an outstanding font-value. (Other font-makers charge $100 to $200 per typeface!) But that's just the beginning. There's an entire library of over 800 typefaces available for you to choose from. Plus foreign languages from Greek to Hebrew to Korean. When you're ready to add to your library, Atech font packs are filled with beautiful assortments of typefaces — two per pack for only $29.95 per package.

NEW! Convert and Use Any Font

If you have fonts, you'll love this new technological breakthrough. Now you can convert any font to any other font format! I changed all my Adobe PostScript fonts to Publisher's Powerpak fonts. When TrueType fonts arrive with Windows 3.1, I'll convert all those fonts too. With Atech's AllType, you can convert to and from all these font formats: **Adobe PostScript Type 1, Adobe PostScript Type 3, Atech Fast Fonts, Microsoft TrueType, Agfa Intellifont, GeoWorks Ensemble, DTC Nimbus Q, CorelDRAW!** and from Bitstream, **Fontware.**



It's so simple to install and use, and you can rename fonts in the process. Don't be fooled — this is high-quality stuff. AllType even converts "hinting" information, which changes spacing and other characteristics for certain font sizes. (Very important for small fonts.) You can create variations like bold, compressed, expanded, hollow and thousands of other variations all from your original typefaces.

PUBLISHER'S POWERPAK

BBA4095-3 **Powerpak for WordPerfect** 3½" . **$69.95**
BBA4095-5 **Powerpak for WordPerfect** 5¼" . **$69.95**
BBA4330 **Powerpak for Windows** Dual **$69.95**
BBA4094 **AllType** Dual **$79.00**
Requires hard disk.

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Coral Gables, Florida 33134

Logitech Introduces Revolutionary, New Imaging Technology. Scans TWICE The Area Of A Flatbed Scanner!

Seamlessly Assembles Multiple Scans Into Large Single Images. Outperforms Flatbed Scanners.

When we first introduced the ScanMan 256 Grayscale hand scanner last year, it met with a roar of enthusiasm. We published the results of our testing — unbelievably sharp scans, with crisp, rich detail and 256 levels of gray. Scanning photos, illustrations — and text — was instantly taken to a new level. In head to head testing, we found the Logitech ScanMan 256 to be more versatile, faster and capable of producing large crystal-clear images. The 256 levels of gray add more depth and realism to all your scanned images.

Logitech had created the ultimate hand scanner, the hottest new product of the year.

But when you work with Logitech, you come to understand that they never sit still. While the ScanMan 256 was sweeping the industry (*PC Magazine's* "Editor's Choice," *InfoWorld's* 1991 "Product of the Year," *PC Computing's* "Most Valuable Product of 1991"), they were at work designing an enhancement that would catapult it to another level entirely — a completely new category of scanners. The innovation: Virtual Page Scanning. The Technology: the Logitech Autostitching feature. It automatically "stiches" 2, 3, — even 4 scans together (so it can handle TWICE the area of an 8.5 by 11 flatbed scanner!). No other scanner we've ever seen can automatically merge scans into one completely seamless image. We scanned dozens of photos, large illustrations, 11″×17″ posters — each one was perfectly seamed. The ScanMan 256 smooths and de-skews the stitch, while evening the tones across the scans for remarkable images. Scan left to right, top to bottom — any way you like, the powerful ScanMan 256 software takes care of the rest.

The ScanMan 256 is constructed with the highest-quality materials. Of course it features the same "red-beam" technology that produces 7 times more light than conventional technologies, so more information is captured by the scanner, producing professional-quality scans in seconds.

Scan large photos or illustrations — up to 16 inches wide by 22 inches long — the largest scanning-area possible for any desktop scanner. It's fast and easy to use, with the superior engineering and design that goes into every Logitech device. The ScanMan 256 is the smart choice in scanning, replacing the bulky flatbeds, delivering unequalled depth, sharpness and clarity. There's really no reason to even consider any other scanner.

In addition to the ScanMan 256, you get a copy of the FotoTouch Image Editing System, which acts as the host application for the ScanMan 256. Scanned images are automatically transfered directly to FotoTouch for immediate editing, with your choice of great new tools and effects. You'll perform advanced, 256 gray scale editing and allows you to print your images with amazing results on any dot-matrix and laser printers as well as Linotronic typesetters and other professional equipment.

As scanning text becomes more important in business, ScanMan 256 provides Perceive, one of the industry's highest-rated OCR software. The 256 grayscale support means text of any size, with any background color or pattern will be captured with precise accuracy. Perceive allows fast, easy capture of text at virtually any size — it's heavy duty OCR!

LOGITECH

BBA2594 **ScanMan 256/Perceive** **$279.00**
Call for requirements.

Amazing Scans! Scan an area twice the size of even flatbed scanners!

Includes FotoTouch image retouching software. Modify your digital photos with a wide array of special effects and specialized enhancement tools.

Instant Digital Snapshots!

Introducing The Incredible New Logitech FotoMan...

REVIEWER'S NOTEBOOK: *What is it? In short, it's a portable, digital camera — for your computer. FotoMan takes great pictures with amazing clarity and 256 grayscale richness — then allows you to instantly download them to your PC. It includes a slew of image editing tools that open a world of creative opportunity, and is compatible with virtually all desktop publishing programs. The applications for this new technology are enormous. Insurance and real estate professionals are using it to expidite claims and transmit photographs of neighborhoods and homes. Manufacturers use FotoMan to quickly catalog products and parts, while law enforcement officials are using it to photograph suspects, crime scenes and evidence — without the time and expense of film, processing and prints. Digital images are instantly captured and merged into documents, or stored as a permenant record. Up to 32 images can be shot and stored on the FotoMan's RAM chip, then transfered via serial port to FotoTouch — or previewed on your screen.*

There are hundreds of practical uses for this new product, but we found FotoMan was a lot of fun. Fast and easy, it comes with an automatic flash, one-button operation and a field of focus from three feet to infinity. Includes FotoTouch for image editing, including 256 grayscale editing.

One of the hottest new ideas in computing: the digital photograph — taken by a small, portable and easy to use camera that allows instant transfer to your computer — without a digitizing board or any other hardware.

In the past, getting a photograph into your PC meant using a traditional film method. The film would first be processed into either slides or prints then scanned or stripped into your document. Now, just snap a photo of a new employee, for example, and send it directly to the corporate database. Once you've got your shot on-screen, the FotoTouch software allows you to easily make modifications. Then save your image in either TIFF, CCIT, BMP, PCX or EPS format. There's no film, no developing and no waiting!

Real Estate professionals can send pictures of homes to prospective buyers, editing out undesirable objects like garbage cans. Or images can be put together — like different shots of landscaping to create a custom layout. FotoMan and FotoTouch are like having a complete darkroom in your PC. The possiblities are endless.

Us FotoMan images for multimedia and presentations. Produce personalized stationery, letters, invitations and anything else where you want to add real-life images to your computer documents.

It portable! FotoMan packs all its power in a rugged unit that's small, lightweight and battery-operated, so you can take pictures anywhere.

Take pictures indoors and outdoors — Fotoman includes a built-in flash for indoor use and a neutral density filter for perfect use outdoors, too.

LOGITECH

BBA2592 **FotoMan** **$599.00**
Call for requirements.

To Order Call Toll-Free: **1-800-888-4437**
Circle 193 on reader service card.

We Accept:

Stop Hard Disk Death! (Even After It's Too Late)

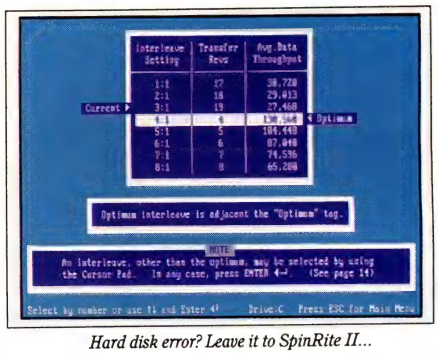
REVIEWER'S NOTEBOOK: *It's plain and simple: If you have a hard disk, you absolutely must have and use SpinRite II. You don't need to know how your hard disk works (although it will teach you if you like). You don't need to know why DOS just gave you a hard disk error, or why DOS says it can't find your valuable data. All you need to know is your hard disk is like everything else in this universe; it won't last forever. But don't despair; there is something you can do about it. With a little easy maintenance you can make your hard disk last longer, run faster, and run more reliably. Think of a hard disk as a car. Proper maintenance can make a car last indefinitely, and a little fine tuning makes it run so much better. Proper maintenance will do that for your hard disk too. SpinRite is the original in its class, and this all-new SpinRite II is still the world's finest.*

Byte Magazine summed it up best when they wrote, "SpinRite is what the word MUST was invented for." This vital maintenance software will give you years of extra hard disk life. It will recover your valuable data even after DOS says it can't be found. It will make your hard disk faster (400 to 500% increases have been reported). And best of all, SpinRite II will do all this automatically and easily.

The user interface and easy-to-read manual are the best in the industry. Not because they're huge, scholarly volumes of intricate details (they're not), but because they're easy to follow, written in plain English, and the manual is just the right size to read and use. It's quite a relief to finally get your hands on a computer manual you can really understand and put to good use. And that's the overall theme of SpinRite II: easy-to-use. When you couple that with the fact that SpinRite is the world's first and foremost product of its kind, you get an unbeatable combination dedicated to not only the prevention of premature hard disk death, but its miraculous resurrection even after it's 6 feet under.

Hasn't Been Done Since It Left The Factory!

That's right. The most important information on your hard disk hasn't been renewed or changed since it left the factory. What information is that? It's the most vital of all, the identification addresses necessary for finding data on your hard disk. And since information on a hard disk is basically written with magnetized "holes," the magnetic properties can wear and lessen with age. What's more, the mechanical motions of a hard disk over the years (a hard disk continually spins at 3600 rpm) will cause the alignment of the mechanical parts to shift, thereby causing additional problems finding your valuable data. This ends up with a message from DOS saying your data can't be found. (Horrors!)



Hard disk error? Leave it to SpinRite II...

How does SpinRite handle that? It actually rewrites all the original information on the hard disk, including the vital identification addresses. This alone adds years to the life of your hard disk, and all by itself would well be worth the price of SpinRite (but SpinRite does so much more). As a better-than-new bonus, SpinRite rewrites that data in such a way that the hard disk is actually faster than when it left the factory — as much as 500% faster!

Perhaps you're wondering what happens to your data while SpinRite does all this. It might appear that you need to backup your hard disk before SpinRite can "start from scratch." Worry not, because that's the best part. SpinRite does everything without loosing your data! It's so automatic, you can start the process, go to lunch, and come back to a hard disk that's better than brand new condition.

SPINRITE II

BBA3285 **SpinRite II** **$79.95**
Requires DOS 2.1 or above.

THE CD-ROM SUPERSTORE

If you've got a CD-ROM reader, here's a brand new collection of incredible new titles that will make your library more enjoyable—and more useful. Choose from art, business, news and late-breaking shareware...

Quick Art Deluxe. Packed with over 3000 top quality images for use with your PC in TIFF and IMG formats. The ultimate desktop publishing art source — in fact, it's the only art collection you'll ever need! Choose from animals, borders, energy, food, holidays, maps, occupations, people, science, sports — hundreds more!

Trade Opportunities. A great business disc! The need for products and services in the international marketplace is exploding — this disc is full of information on how you can take your place in the new global economy. Includes Department of Commerce Trade Opprotunities Program (TOP) and Commerce Business Daily (CBD). Also includes External Affairs and International Trade Canada 1991 Companies for World Markets as well as a complete section on how to sell to international markets and a helpful information reference guide. Covers qualification process, bidding procedures and techniques, statistics contacts and much more.

The Wazata World Factbook 1991. Just released! The Wazata World Factbook 1991, based on the CIA World Factbook, is often called the "World Almanac of the Federal Government." This annual publication is jam-packed with extensive examinations of territories, countries, protectorates and disputed land claims worldwide and is the most complete listing of its kind available today. Includes socio-economic, geo-political, demographic and other country-specific data.

The Washington Times And Insight On The News. The ultimate news reference library on a single CD! Combines the respected journalistic heritage of The Washington Post with the lively weekly coverage of Insight on the News. Total coverage includes events, reports and analysis of topics from January 1990 to June 1991.

Newsbytes International Computing Industry News. The complete archives of the Newsbytes News Network from May 1983 to August 1991. Topics include telecommunications, computing trends, general computing news, government and special articles on IBM, Apple and UNIX.

Night Owl's. All new! Preview over 10,000 of the industry's top software applications. See how they work and if they're right for your needs — before you buy! Includes hot-selling communications, desktop applications, games, development tools, and more — over 600 Mb!

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BBA9501 **Trade Opportunities Int'l & Dom.** **$199.00**
BBA9502 **Wayzata World Factbook 1991** ... **$35.00**
BBA9503 **Wash. Times & Insight on the News** **$99.00**
BBA9504 **Newsbytes: 5-83 to 8-91** **$85.00**
BBA9505 **FPN 1991 (1-91 to 12-91)** ... **$99.00**
BBA9506 **Night Owl's 1-90 to 10-91 PC** . **$95.00**
BBA9507 **Windows Shareware Gold 3.1** **$120.00**

A Railroad On Your Desktop!

It's the most fun I've had on my PC in years! Creating my own railroad line right on my screen — then create my own collection of customized cars! You design the track layout, using special tools that keep curves aligned and precise. You can design tracks of any configuration, including figure-8's and track switches.

And when the track is done, landscape the scene with buildings, trees, rivers, roads, bridges and more. Just select from the graphical menu bar as you design. There's also a complete set of drawing tools to create any type of layout, object or building. Design Your Own Railroad also includes an assortment of sample track layouts to get you going. Then build the ultimate train set! Choose from dozens of classic cars, modify them, colorize them, add logos, designs and more. Then put your design to the test... delivering goods and collecting the revenues.

Design Your Own Railroad

BBA3790 **Railroad** **$49.95**
IBM PC XT, AT, PS/2 or compatibles; DOS 2.0 or later; 512K RAM.

Your Dream House.

Go ahead — design that new addition to your home! Put your imagination to work on the interior, then plan the perfect landscape. Experiment with different layouts, colors, shapes and arrangements using the Design Your Own Home Series. It's fast, easy and fun — the results are clean, precise and professional. These three simple-to-use computer aided design systems include dozens of sample floorplans, pre-drawn furnishings, plants, flowers, trees and shrubs. Modify them to suit your taste, or start from scratch to create just the environment you've been dreaming of. Enough power for professional use.

BUY ALL 3 – SAVE $30!

Design Your Own Series

BBA3001 **Architecture** 5¼" . **$49.95**
BBA3002 **Interiors** 5¼" **$69.95**
BBA3003 **Landscape** 5¼" ... **$69.95**
Requires 1MB or more; mouse, ImageWriter, LaserWriter. ***Macintosh versions available.***

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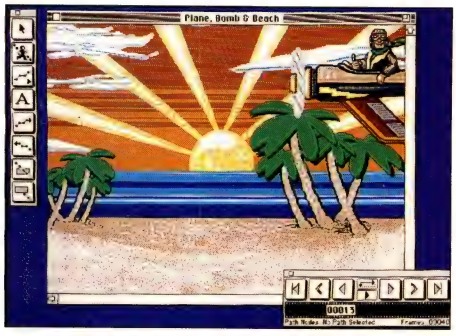
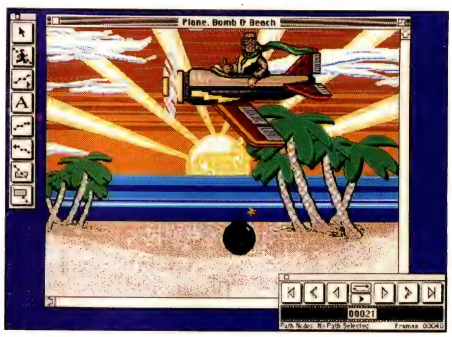
Coral Gables, Florida 33134

Create captivating presentations and movies just like the pros — in 3 easy steps.



First create a background in Animation Works or your favorite paint program. Next create the "actors" the same, easy way.



Finally, put it all together with point and click ease. Use hundreds of special effects and sound for state-of-the-art shows!

The Desktop Movie Studio!...

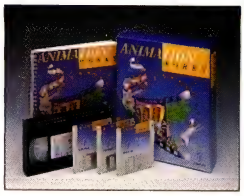
Create Fully Animated Scenes In Just A Few Minutes...

REVIEWER'S NOTEBOOK: *This remarkable product allows you to animate — by just drawing lines; in effect, telling the system where to move the objects and how fast. That's it. Quickly defining what the objects, "actors" and backgrounds will look like. Animation Works allows you to create colorful movies for sales presentations, demonstrations, storyboards, video titling and production. It's easy enough for inexperienced users, yet has all the power and features for graphic designers, creative directors and video producers. They love how easy it is too. Great training and educational tool. To create a sequence illustrating how a piston works or how a bird achieves flight would take about twenty minutes. Just draw lines to show Animation Works the path...*

Animation is high-impact communication. The ability to deliver messages to an audience, student or prospect with animated sequences along with sound and text is dynamic. Animation Works makes it simple; that's why it's become one of the most popular PC multi-media products in the business. The concept of "path-based" animation makes moving an object as easy as drawing a line across the screen. Establish different paths for each object in your scene, or attach the motion of one object to that of another, for complex sequences. Animate text to create titles, scrolling credits and feature lists. Quickly add customizable wipes, fades and other intriguing transitions between scenes. Animated mattes allow you to enclose action within a shape for incredible video-like effects. Adding backgrounds, sound, special effects, color and mattes are a mouse click...

The Color Cycling capabilities allow your imagination to explode with animated color effects, giving you four independent color cycle ranges.

The sequence of three frames you see on this page have been taken from 25 frames that make up the entire animated sequence. Here's how we did it: We first assembled our background (we created the scene in Animation Works, but we could have done it in a paint program), using a variety of shapes, patterns colors and textures. The Film Player you see in the lower right-hand corner of the screen tells us which frame in our movie that we're currently editing.



Animation Works is an innovative new program to create animated sequences — but don't be intimidated! It's easy! You can create your own animations right out of the box! It's one of the most enjoyable products we've seen in years!

ANIMATION WORKS

BBA2702 **Animation Works** **$120.00**

Don't Buy Another Printer—Share The One You Have!

REVIEWER'S NOTEBOOK: *The Kansai Printer Sharers eliminate the need for new printers. If you're already sharing printers, you know the time-consuming task of switching cables is not the answer. Manual switches make life a little easier, but are infamous for introducing static interference and noise that can distort printing (and void your printer warranty). Only the Kansai Printer Sharers allow seamless connection of two or four PCs to every printer. This thing is a tiny miracle, just 4.5 inches square with the ability to eliminate interference that plagues other methods. Simple to install, just plug your cables in, turn everything on and you're ready to print from two or four PCs.*

Once installed, the Kansai Printer Sharer directs traffic to the printer, actually sensing when one of the computers is about to send data and immediately connects that computer to your printer. During that printing session, the other computers are locked out automatically, keeping data safe.

And since the printer sharers are electronic, they won't void your printer warranty like a mechanical switch can. When your computers have documents to send to the printer, the Kansai Printer Sharer prints them on a first-come-first-serve basis. When the printer finishes the first job, it automatically checks for more data for 15 or 30 seconds (your choice), then another PC takes over automatically. There are convenient status lights that allow you to monitor the progress of the print jobs, and which PC is currently accessing the printer. On-line indicators for each port help you monitor activity at a glance.

You have complete control of your printer with automatic prioritized switching and the small footprint saves desktop or print-station space. Effectively cuts your printer costs, without loss of productivity or risk to data. Our testing yielded 100% reliability.

Features:

Connect two or four PCs to every printer; convenient on-line indicators for each input port; automatic prioritized switching gives you complete control; electronic design eliminates interference and small footprint design saves space.

Specifications:

No. of Ports:	2 or 4 input ports, 1 output port
Interface:	Centronics Parallel
Switching method:	Automatic prioritization by print request sensation
Switching wait time:	15 seconds or 30 seconds
Indicators:	Power Port Selected
Power Supply:	5V DC, 400mA with constant voltage regulator
Dimensions:	4½″×4½″×1¼″

KANSAI

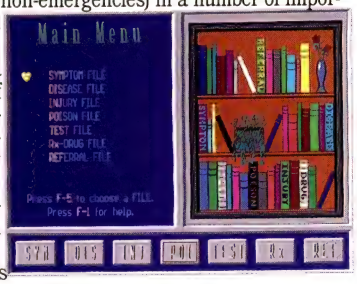
BBA6700 **2-Port Printer Sharing Device** ... **$99.00**
BBA6702 **4-Port Printer Sharing Device** .. **$149.95**

Circle 193 on reader service card.

A Complete Medical Advisor For Your PC!

Do you know how to tell if your child has chicken pox, the mumps or a more serious condition? Do you know what to do if your child accidentally ingests a household cleaner? Do you know what to do in the event of a scuba injury? Your family's health is your responsibility. If an accident occurs, every minute counts — you need to know instantly what to do, and what not to do.

Schueler's Home Medical Advisor is an easy to use, interactive home medical reference system that can answer your medical questions (for both emergencies and non-emergencies) in a number of important categories. Created by a team of Board Certified Emergency Physicians in collaboration with graphics professionals and technicians, The Home Medical Advisor covers all age groups. It is colorful, informative and fast, putting volumes of medical and health information in a fast-access format. All information is easy to understand and emergency instructions are clear and concise.



The Symptom File. From The Home Medical Advisor's Main Menu select Symptom File and view a list of the most common symptom complaints by patients. This file will quickly formulate up to 400 potential diagnoses, employing over 1400 questions and 600 color VGA illustrations (the graphics are incredible!). The Symptom File includes a listing of 70 of the most common chief complaints, often the worst, or most bothersome symptom. Home Medical Advisor will ask key questions and arrive at possible diagnosis from its vast knowledge base.

The Disease File. The Disease File provides extensive information on over 450 diseases with along with discussions of their causes, common symptoms, physical evaluation and treatments. There are also special sections on pediatrics and problems unique to women.

The Injury File. A listing of over 200 common injuries and treatments. Everything from gunshot wounds, burns, cuts and bruises to acute mountain sickness and broken bones is indexed by body part for fast reference.

The Test File. Diagnostics have advanced by leaps and bounds over the past several years. The Home Medical Advisor's Test File provides a listing of over 140 of the most widely used medical tests. Each section explains exactly how each test is performed, why it is used, its limitations, risks and benefits. Includes a special section on "What to expect."

The Drug File. The list of pharmaceutical agents grows longer every year. The Home Medical Advisor includes a listing of over 600 medications (prescription and nonprescription) with exhaustive information on their uses, potential side effects and drug interactions.

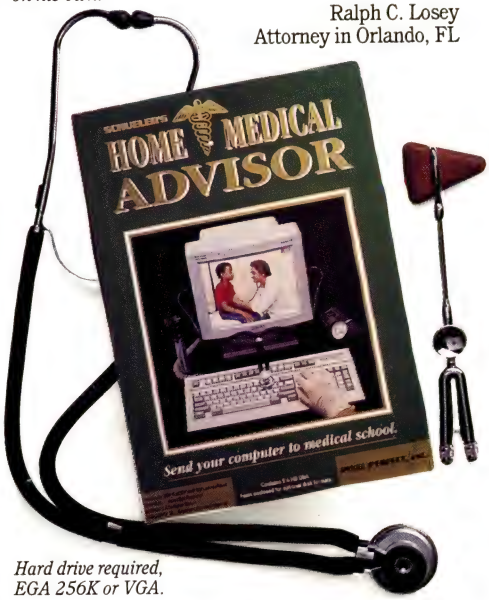
The Poison File. An important section for households with small children. Although many poisons today are supplied in child-proof containers, accidents can happen. The Poison File contains a list of over 500 poisonings and exposures. This file will tell you exactly what to do and who to see for a variety of plant, medicinal and household ingestions.

The Referral File. When you register your copy of Home Medical Advisor, you'll be eligible to receive a listing of Board Certified physicians, hospitals and specialty clinics in your area. Registered users will be eligible for updates (every 10-12 months).

Complete and easy to understand, this is one of the most important NEW titles on the market today.

"The program was interesting and detailed enough to fascinate me, yet easy enough for my 8 year old to run on his own."

Ralph C. Losey
Attorney in Orlando, FL



Hard drive required, EGA 256K or VGA.

Home Medical Advisor

BBA3860 **Home Medical Advisor** 5¼" **$69.95**

Premium Quality Memory Upgrades At Shockingly Modest Prices!

If you use a computer, you know the benefit of more memory. With a few more megabytes of memory you not only load it, you see it snap and pop onscreen with lighting speed.

We're proud to present the highest quality, most reliable memory available. Offered directly from the manufacturer, Z-COM Micro Electronics, you get top quality for practically wholesale prices.

Can You Do It?

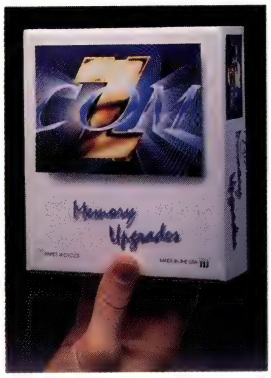
Think adding memory is over your head? It's not so hard really. Your computer manual will tell you what kind of memory chips you need. And it will even show you a picture of where to plug them in.

For PCs and all compatibles, we offer three sizes of SIMMs, which stands for Single Inline Memory Module. A SIMM is a small board with memory chips on it. You simply plug the board inside your computer. Very easy to install. Each SIMM comes in either 256KB, 1MB, or 4MB size, to fit the right size your computer needs. And these chips are fast! Most others sell 100ns (nano-second) chips. But our 256KB SIMM has 80ns chips, and 1MB and 4MB SIMMs have 70ns chips. That's fast! You'll get quicker calculations and eye-popping graphics.

Laser Printers.

Ever tried to print a full page of graphics on your stock laser printer? If so, all you ended up with is a half-drawn image. Stock laser printers just don't have enough memory to complete a full page. But the solution is simple. A memory card you slip into the side upgrades your printer for full page graphics and all the fonts you could ever want. There are additional sizes available.

Z-COM has been producing memory upgrade



products for the past six years and manufactures standard as well as proprietary memory upgrade products for Apple, AST, AT&T, Canon, Compaq, Epson, Everex, Hewlett Packard, IBM, NCR, Okidata, Panasonic, Sharp, Sun, Texas Instruments, Toshiba and Zenith computers, workstations, and laser printers. Z-COM currently manufactures memory upgrade products for over 20 manufacturers and currently has over 200 line items.

Z-COM designs, assembles, tests, and packages their memory upgrade products. With a multi-million-dollar assembly facility, including a Class-100,000 Clean Room. All Z-COM products are manufactured using the highest quality equipment under the tightest tolerances and the strictest controls. Z-COM's manufacturing process begins with having all products run through their incoming inspection process. Everything is double checked, from board tolerance and thickness, to the consistency of the solder paste. Z-COM controls the manufacturing process from the moment the ICs arrive at our facility, through the manufacturing process, up to the final packaging.

INCLUDES FREE BOOK!

When you purchase Z-Com memory, we'll include "A Very Basic Guide to Memory" from the Tiger Editors. This is a complete explanation of how memory works and how to easily upgrade.

Z-COM

BBA6430 **SIMMS 256 × 9 80ns** **$14.00**
BBA6431 **SIMMS 1 × 9 80ns** **$49.00**
BBA6432 **SIMMS 1 × 9 70ns** **$49.00**
BBA6433 **SIMMS 1 × 9 60ns** **$52.00**
BBA6434 **SIMMS 4 × 9 80ns** **$178.00**
BBA6435 **SIMMS 4 × 9 70ns** **$179.00**
BBA6436 **SIMMS 4 × 9 60ns** **$199.00**

Z-COM MEMORY UPGRADES

For AST Systems

BBA6437 **1Mb for AST Premium 386C, 386/16** **$99.00**
BBA6438 **1Mb for AST Premium II 386SX20, 386SX16, Cupid-21, AST Premium 386; 25 & 33** **$59.00**
BBA6439 **1Mb for any AST Executive Notebook** **$72.00**

For Compaq DeskPro's 4 Laptops

BBA6440 **1Mb for DeskPro 386/20e, 20, 25e & 25** **$80.00**
BBA6441 **1Mb for SLT/286** **$89.00**
BBA6442 **1Mb for Portable LTE/286** **$93.00**
BBA6443 **1Mb for Portable 368S/20** **$179.00**

For Hewlett Packard LaserJets

BBA6444 **1Mb for LaserJet II & IID** **$85.00**
BBA6445 **1Mb for LaserJet IIP, III & IIID** **$80.00**

For IBM PS/2

BBA6446 **2-14Mb Xpand w/2Mb for Models 50, 50Z, 55SX, 60, 65SX** **$267.00**

For Toshiba Laptops

BBA6447 **1Mb for Portable T1000SE, LE & XE** **$119.00**
BBA6448 **2Mb for Portable T3100SX** **$119.00**
BBA6449 **2Mb for Portable T3100E** **$119.00**
BBA6450 **2Mb for Portable T3200SX** **$119.00**
BBA6451 **2Mb for Portable T5100** **$119.00**

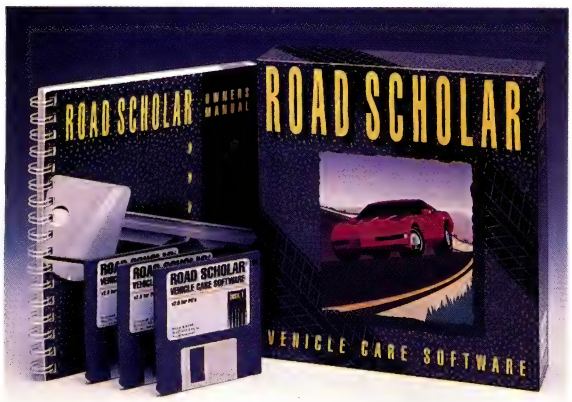
SIMM Modules have a 5-year warranty; all other memory at lifetime warranty. Call for additional items. 100ns RAM also available.

Automate Car Care with Your PC...

Introducing the World's Only Car Care Software...

REVIEWER'S NOTEBOOK: *The business of owning (or leasing) an automobile: controlling insurance costs, increasing your car's resale value, prolonging its life, paying less tax and keeping up with the details. You can make light work of your car's care and feeding with a unique new product called ROAD SCHOLAR. Let's face it, a car is a big expense and you've got to take good care of it or else you pay dearly at trade-in time. Besides keeping track of maintenance and safety issues, ROAD SCHOLAR reminds you of license and insurance renewals, inspections, warranty expirations and more. Business drivers can print accurate reports for tax deductions, tracking expenses to the penny. Miles-per-gallon and cost-per-mile figures, maintenance history, graphs and charts on vehicle performance, stores all vehicle documentation, more! Any type of vehicle: car, motor home, truck, motorcycle — even golf carts! Wouldn't it be nice to have someone remind you that you're due for an oil change? How about instant information on vehicle fluid capacities, insurance requirements or market value of an automobile. How about complete listings of phone numbers of manufacturer's representatives.*

Easy to install, fun and fast to use. ROAD SCHOLAR takes care of all the details — no more scrambling for maintenance records, insurance papers and other documentation.



An excellent tool for business drivers and auto enthusiasts. New car buyers will love to chart the miles-per-gallon and cost-per-mile performance of their new car versus that old trade in. For the IRS, ROAD SCHOLAR maintains a continuous tax record of monthly and annual Business vs. Personal mileage, tracking deductible expenses automatically. You'll get the maximum tax benefit and get concise support documentation.

Users report higher resale value, thanks to ROAD SCHOLAR's accurate historical maintenance, repair and expense information. We tracked the operating-only cost of four different types of cars: A Corvette, a Cutlass Supreme, a Mazda Miata and a SAAB 900 Turbo over a four-week period. While the Mazda was the least expensive to run over that period, we were surprised to learn that the SAAB was more expensive to operate than the Corvette.

Road Scholar handles every aspect of owning a car: Warranty, Safety, Steering & Suspension, Tires, Wheels, Brakes, Title, Tags and all Permits. It also includes a helpful warning system that helps you keep track of important dates and avoid unnessesary expense and road problems. The Preventive Maintenance alert always takes a priority with Road Scholar.

Quickly track cost-per-mile!

Road Scholar alerts you to other important dates as well, including your Warranty expiration dates, Inspection dates, License expiration dates (including tags, title and permits). It also alerts you as to the due date of your next insurance premium and your gasoline credit card payment dates. How many times have you lost track of warranty expiration and ended up paying for work that WOULD have been covered? That will never happen with Road Scholar.

The Vehicle Inventory Information section of Road Scholar can save you money on insurance by recording things like anti-lock brakes, anti-theft alarm and passive restraints. Recording this information as it applies gives you instant access to information on eligibility for insurance premium discounts. Many of these discounts are substantial.

Whether you're an auto enthusiast or just want to get the lowest cost-per-mile, Road Scholar is the perfect tool. One of the most original new products.

ROAD SCHOLAR

BBA3345A **ROAD SCHOLAR** **$59.95**

Automatically Turn On Your PC By Modem!

REVIEWER'S NOTEBOOK: *This best-seller is a must for anyone who uses a computer on the road or at home, as well as the office. With the price of pocket-sized, very fast modems coming down, remote computing is becoming a business standard. Now you can call from any phone and turn on any remote computer (or any other equipment), without the wear and tear or maintenance cost of leaving the equipment running full time.*

With pcAnywhere, Carbon Copy, Commute or any other remote communication software you'll have total control over your remote computer. Then, when you hang up, the equipment is turned off — all remotely and automatically.

Remote Power On/Off works like this: Just connect the Remote Power On/Off unit to your office PC. Then, from your home or remote location, actually turn on the office PC and begin work. With remote communication software, you can access and use software applications, perform lightning fast data transfers, even use printers and other peripherals connected to the office PC. And here's the enormous benefit: the office PC does not have to be running 24 hours a day. You'll see significant savings in energy costs (estimates suggest that running a PC and laser printer 24 hours a day can cost an extra $50 each month) and over time, you'll reduce wear on the equipment

Network An Office In Less Than An Hour!

No Experience Required! Share Printers, Send Messages and More.

Easy Office Network makes connecting PCs as easy as plugging in a new phone.

It seems everyone wants to connect up their computers lately. Being able to share an expensive laser printer or a high-speed, costly modem is a big money-saver. Not to mention the increased productivity gained by sending electronic messages between PCs. Then there's the advantage of quickly and easily transferring files. (What's worse than having to transfer a file too large to fit on a disk?)

Reap the benefits of networked computers without the little-known hassles. Expensive networks like Novell require expert (read in "high-paid") technicians to do the simplest of everyday tasks. And big networks require special versions of your existing software. (That's a big hidden cost — new WordPerfects, 1-2-3s, etc.) You could spend thousands of dollars to connect just a handful of PCs.

But with Easy Office Network, there's nothing extra to buy. Everything you need — cables, connectors, etc. — comes complete in one easy-to-use package. Anyone can quickly install Easy Office Network. It's as simple as plugging in a telephone. (In fact, they use the same kind of wire and plug.) After one fast, initial installation, Easy Office takes care of itself with no further attention from you. You'll be reaping the benefits of networking — without the hassles!

- **Share Serial and Parallel Printers with Disk Spooling.**
- **Share Expensive Modems.**
- **Send Messages Between PCs.**
- **Run Remote Applications.**
- **Transfer Files Between PCs.**

When you throw in password security, file locking, and a host of other features, Easy Office Network becomes a vital business solution.

Start with the 4-PC or 8-PC kit, then add on when the need arrives. Multiple Easy Office Networks easily link together to support 16, 24 or 32 PCs. And don't worry about memory — Easy Office Network uses only a scant 48k.

All you do is plug the Easy Office Network connector into the serial port (which every PC has), and run the simple installation program. No boards or other hardware to install. No expansion slots taken up, and no conflicts with other boards. This product really lives up to its name: Easy.

SERVER TECHNOLOGY

BBA6300 **Remote Power On/Off** **$149.95**
BBA6301A **Easy Office for 4 PCs** **$399.95**
BBA6301B **Easy Office for 8 PCs** **$495.00**
BBA6301C **Upgrade from 4 to 8 PCs** **$229.00**

Remote On/Off: *IBM PC, XT, AT and compatibles with 256K RAM.*
Easy Office Network: *Requires 1 serial port for each PC.*

Circle 193 on reader service card.

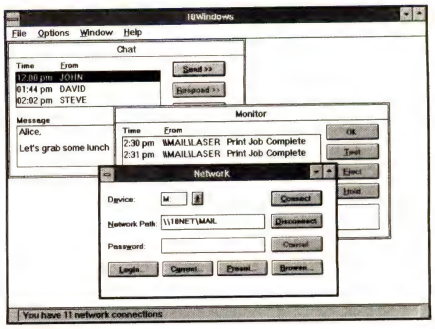
The Fastest, Easiest Windows Networking...

Share Files, Printers, Data And Applications (Inexpensively!)

REVIEWER'S NOTEBOOK: *Do you run Windows and need a way to share files, printers and keep your applications and pool of data just a keystroke away? You need a network. But finding the right network and investing in the technology you really need is a muddy issue — especially under Windows. That's why 10NET LAN has skyrocketed into poularity with small businesses, medium-size-but-growing businesses and departments within large corporations. Since 10NET LAN is peer-to-peer, no server is required — and you buy just the connections you'll use today, and add on as you need in the future. And 10NET LAN adheres strictly to the highest industry standards of compatibility, reliability and interoperability. It's a fast, easy network that gets you going in about ten minutes. Just plug the network adapters of your choice into your computers, run easy-to-install cables between them, insert a 10NET diskette and type install. That's it. Your computers are connected and you can run all of your applications exactly the way you used to. Only now you have access to all the resources anywhere on the network. Everyone connected gets more done — and they don't have to change the way they work. 10NET LAN is a speedster, with higher throughput rates than Lantastic 4.0 and NetWare Lite 1.0 in PC Magazine Benchmark tests. Highly compatible, highly flexible. Great LAN solution. 1-, 3-, and 10-node packs available.*

This product holds the answer to costly, inflexible networks. 10NET LAN makes greatest possible use of your network — and your computers. Zippy throughput and instant access are the trademarks of this program, and it is the most compatible we've seen. Standards-based, 10NET LAN gives you high levels of reliability and expandability, far beyond any product on the market today — without the need for a dedicated server. 10NET LAN supports the SMB protocol, developed by Microsoft, IBM and 3COM, and provides full interoperability with SMB-based LANs such as Microsoft LAN Manager and IBM LAN Server. 10NET LAN is not an off-the-wall attempt at connecting computers; it has been developed according to industry standards.

The issue of expandability is critical. Without the ability to quickly add members to your network, you could be headed for major problems down the road. 10NET offers expansion kits by as many nodes as you need, and supports Ethernet (thin, thick and 10BASE-T), Arcnet and Token Ring. Don't worry — 10NET LAN will easily work with your existing PCs, peripherals and software. This flexible architecture means that you'll never be out of touch with emerging standards and new versions.



PRINTER RESOURCES: 10NET LAN gives you more ways to use your printer — without making anyone wait! Advanced print sharing (spooling) technology is built into 10NET LAN that allows you to keep on working while you print. Share printers between several users, without costly bottlenecks. Prioritize "hot" print jobs and print them first. This feature alone is worth the price of 10NET LAN. Printer tie-ups are one of the most aggravating side effects. 10NET LAN ends those problems forever.

NO SECURITY RISKS: Networks must have a definitive security system. 10NET LAN's security options protect sensitive data from unauthorized access with a strategy so complete, it's in use at many government agencies today. Choose from a full menu of security options for complete customization.

10WINDOWS for 10NET (provided free with 10NET 5.0) provides access to network functions from within Windows.

10NET LAN

BBA3280A **10NET LAN** 1-node pack* **$85.00**
BBA3280B **10NET LAN** 3-node pack **$199.00**
BBA3280C **10NET LAN** 10-node pack **$525.00**
**1-Node Pack requires a 3- or 10-Node Pack for complete software and documentation.*

Simple, Intuitive Contact, Time, Client and Communication Tracking.

REVIEWER'S NOTEBOOK: *A must for businesspeople who need to track dozens of commitments, outside contacts and opportunities. Provides fast, easy sales and marketing information management. As information changes and grows, the SuperOffice database is updated, allowing instant access to all kinds of useful combinations, perfect for the rigors of this environment. Excellent reporting, a great set of tools for easy customer/client management, comprehensive customer tracking, direct mail demystification, telemarketing tracking, lead management (how many of those do you burn?), sales forecasting and much more. In-depth contact management and follow-up tools.*

"The Information Law" states that knowledge must be accessible to everyone — including the managers and executives that are responsible for the company's success. If not, then "Murphy's Law" automatically kicks in and you could be headed for trouble. Managers and executives require a unique set of figures, indicators and reports. They need raw power behind their information and contact management efforts. While computers are used for a variety of "back-office" tasks; word processing, accounting, orders, billing and payroll, they sometimes hold information about customers, markets and trends hostage. SuperOffice is the first product we've seen that combines dozens of important features used often in fast-paced environments, with an easy-to-use operation — that won't change the way you work. You get timely information about your customers and clients, sales activity and tracking, direct mail, lead and inquiry management, sales forecasts, employee activity reporting/tracking and more.

SuperOffice allows employees at any level of expertise to become productive instantly. Work loads are more easily handled and time isn't wasted, vital information doesn't sit untouched or lost and efficiency is boosted with little effort. This remarkable product puts four powerful, easy-to-use office management tools — client contact directory; daily schedule planner; follow-up tracking and correspondence templates — together with a shared database! So vital, up-to-the-second data is at everyone's fingertips.

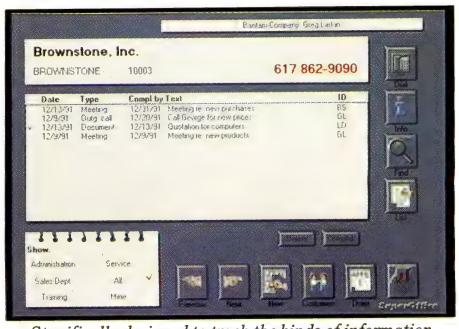
All of the individual tools are fully integrated for streamlined operation, and can be used as a single- or multi-user database system.

Diary. Included in the Diary is the Agenda, an advanced time planner that allows complete control over daily schedules. References include customer names and notes detailing the activity. Privacy encourages use of program for all scheduling, eliminating the need to maintain multiple calendars and ensuring that action items are not overlooked.

Follow-Up. Follow-up provides a comprehensive overview of past and planned activities by account and provides key information about the types of services you are providing your customers and clients. When a customer calls, anyone within the organization can scan all past and planned activities and be of immediate service.

Customers. The Customers' file stores all data about your customers, clients and prospects, including address, phone, fax, and key contacts. An unlimited number of customers and contacts can be entered, with room for notes about each person. Because SuperOffice utilizes a shared database, all users can edit any record.

Letter, Fax and Spreadsheet Templates. SuperOffice simplifies correspondence by providing a direct link between a selected customer record and various pre-designed letter and fax templates, which work with most popular word processing software. By searching for a specific account and choosing a template, the company's mailing address, contact person and date are automatically inserted.



Specifically designed to track the kinds of information needed by business people dealing with clients or the public.

SUPEROFFICE

BBA3794 **SuperOffice Competitive Upg.** ... **$99.95**
BBA3795A **SuperOffice Single User** **$295.00**
BBA3795B **SuperOffice 5 User** **$1295.00**
BBA3795C **SuperOffice 10 User** **$1795.00**
Requires 286 or higher; Windows 3.0; min. 2MB RAM; monochrome, gray scale or VGA monitor; any laser or dot matrix printer.
Call for further information on Macintosh Version.

©1992 TigerSoftware, 800 Douglas Entrance, Suite 765
Coral Gables, Florida 33134

Turn Your Black-And-White Hand Scanner Into An Explosive, True COLOR Scanner!

REVIEWER'S NOTEBOOK: *I own a 256 grayscale hand scanner and often scan photos or illustrations for use in the TigerSoftware catalog. I don't own a color scanner (they are very nice, but very expensive), however a color scanner would sure come in handy sometimes. I could use color to create color slide shows, presentations, newsletters — and posters of the kids. That's why I was particularly intrigued with the CAT Color Converter. It actually converts my B&W hand scanner into a true color scanner! Just attach your 4" wide hand scanner to the CAT Color Converter and scan your color photo 3 times, using the built-in colored filters. When you've completed your scans, the CAT software combines the images into a fully balanced, true color image automatically. A legitimate alternative to a color scanner, with top-notch quality.*

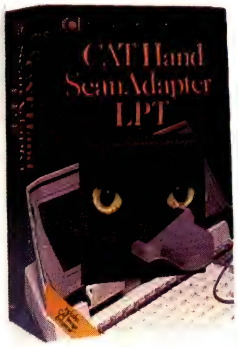
The CAT Color Converter works with all leading B&W scanners.

The CAT Color Converter allows you to capture thousands of colors and if you have a grayscale hand scanner, you'll get up to 16 million vibrant colors. If you've got a VGA display adapter, the optimal 256 colors will be automatically selected for scans with lifelike color and rich detail. The powerful CAT Color Converter software (included free) allows you to easily adjust the color palettes, brightness and contrast. Using this powerful software, you can create exportable .PCX and .TIF files in RGB format for use in desktop publishing, draw and paint programs (I work extensively in PC Paintbrush, DeluxePaint and ColorRIX, CorelDRAW! and Designer) to combine text, graphics, special effects and more. Everything you need is in the package: The CAT Color Converter scanning guide (12"×10"×1"), with built-in color filters, light source and hand scanner mounting device. You also get the CAT Color Converter image processing software, power adapter and complete documentation.

CAT Color Converter Supported Hand Scanners: The Complete Half-Page Scanner 200/400/GS; DFI Handy Scanners HS-2000/3000/3000 Plus; GeniScan GS-2000 Plus/4000/4500/B105G; Logitech ScanMan/ScanMan Plus/ScanMan 32/ScanMan 256; Marstek Mars 105/105 Plus/800; Mouse Systems PageBrush/32; Niscan/Niscan GS; Primax SE-400/SE-800.

Use Your Scanner With Your Laptop! Scan On The Road, At A Meeting Or At The Library!

A perfect match. Your portable or notebook PC and your hand scanner. The CAT Hand ScanAdapter LPT connects directly to your computer's parallel port and allows you to capture any information, photo or design—anywhere. The small, pocket-sized device slips *into* your briefcase and comes complete with CAT Image Enhancer software which automatically converts hand-scanned, dithered images into 16 levels of gray. It also allows you to create files for use in professional graphics manipulation. It's simple, fast and very convenient. Works beautifully with all leading black & white hand scanners that we tested: The Complete Hand Scanner and half-page scanner, Logitech, Marstek, DFI Handy Scanner and Geniscan. Allows direct output to Epson dot-matrix, HP LaserJet and DeskJet, supports Hercules, CGA, EGA and VGA display, allows automatic image scaling and cropping and more.



CAT Hand ScanAdapter LPT Supported Scanners: The Complete Hand Scanner 200/400; The Complete Half-Page Scanner 200/400; DFI Handy Scanners HS-1000/2000/3000/3000 Plus; GeniScan GS-2000/2000 Plus/4000/4500; Logitech ScanMan/ScanMan Plus; Marstek Mars Scanners.

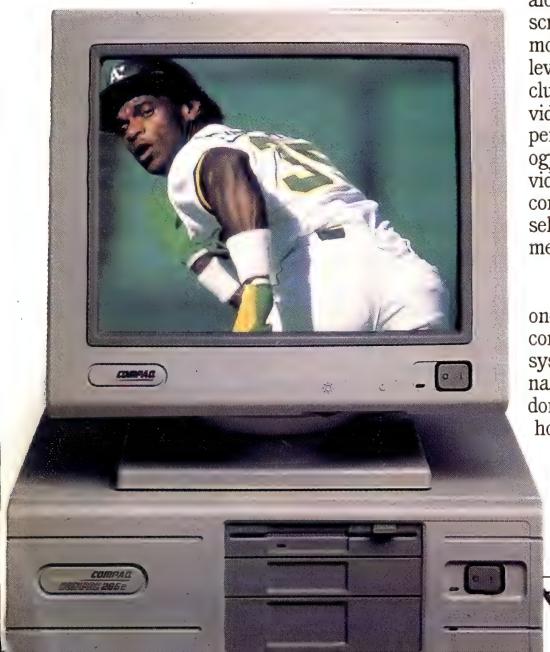
CAT

BBA3120 **CAT Color Converter** **$159.95**
BBA3121 **CAT Hand ScanAdapter LPT** **$139.95**
IBM PC XT, AT or compatible; VGA or SuperVGA graphics adapter; 640K RAM Memory with hard drive; PC-DOS or MS-DOS 3.1 or higher; supported hand scanner.

Watch TV — On Your Computer!

Full Audio And Video — 119 Channels And Cable — Right On Your PC!

I always wanted to do this! I'm often working at my computer, preparing a spreadsheet or working on a word processing file, and thinking "I wonder who's on Oprah today?" During baseball season, it would be nice to catch a couple of innings of a daytime doubleheader from Fenway Park or tune in for CNN's Headline News. Now, Desktop TV puts a TV set inside my computer that lets me watch my favorite shows! I can return to my spreadsheet at anytime and continue to listen to the audio of the news, Good Morning America or Donohue. If the conversation gets wild, one keystroke switches me back to television.



Desktop TV supports both DOS and Windows 3.0 environments, without any reconfiguration. And I can even watch TV while my computer prints, does backups — anything that doesn't require my monitor. Desktop TV has no adverse effect on my monitor, it runs as it always does.

This is one of the hottest new innovations to come along this year, delivering a great picture on my PC screen just like my TV at home (PC displays provide more dots per inch, and Desktop TV delivers VGA-level quality). I get full 119-channel compatibility (including cable, VHF, UHF, VCR, video camera and videodisc) and great sound, with Desktop TV's superb speaker system. Desktop TV advanced technology shatters the barrier between high-quality analog video and computer-based information. Everything is controlled from my keyboard: video source, channel selection, volume control, audio monitoring and even memory settings for your favorite channels!

How Does It Work?

It's simple. The Desktop TV board installs in seconds into a standard PC expansion slot. It comes complete with cables, control software and speaker system. Just connect a standard coaxial cable, external antenna or rabbit ears to the card and you're done. Desktop TV hooks up just like your TV at home. I'll never miss a World Series game again!

It's Fun, But There Are Serious Applications As Well...

I love my Desktop TV system. I can watch the news, the closing stock reports and more without leaving my office. But the potential uses of this system are unlimited. Firms with internal broadcast facilities can use Desktop TV to distribute material throughout their offices without moving their staff to viewing rooms. By attaching a PC to a VCR, corporations of all sizes can conduct on-screen training sessions using pre-recorded videocassettes (many software vendors include tapes in their packages). In fact, using a video camera, you can turn your PC into a video monitoring station for security.

Special Features:

- Full Screen Video on a computer monitor.
- Quality color picture.
- One touch PC to TV switching.
- 119 channel TV tuner.
- Full keyboard control.
- Audio monitoring mode.
- *RF Video input:* F Connector; for VHF, UHF and Cable TV, VCR, videodisk, or network supporting RF modulated NTSC video signal.
- *Audio output:* Mini phone jack, for connection to a speaker or headphones; external speaker included.
- *Video graphics adaptor:* VG1 model requires a VGA board; MF1 model supports EGA & VGA boards.

DESKTOP TV

BBA3882 **Desktop TV** 5¼" & 3½" **$299.00**
IBM XT/AT (286/386) or compatible; MS-DOS 3.1 or higher; controls available either through DOS, a TSR or Windows 3.0. Call for further details.

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Add Thunderous Pro-Quality Sound To Your PC!

What's it all about — MultiMedia? Audio boards? Sound effects and mixing? How about this new generation of games that include monstrous audio effects? How do I get those capabilities on my PC? It's easy, and not just for professionals anymore! Now, with Media Vision's easy-to-use, low cost audio systems, you'll hear the blast of rockets, the screech of tires, the jingling of keys and the screams of the latest victim. Some games are so audio intensive, they're nothing with the sound to accompany the video (think about the last movie, commercial or TV show you saw and how the music played such an important part). Listen to soundtracks and special effects built into other software programs as well with the awesome Thunder Board. Just slip in into your PC and start hearing your software in full stereo sound. Thunder Board is completely compatible with AdLib and Sound Blaster, so you can play games that support synthesized music.

But when you're ready to move to a higher level of audio presentation, the Pro AudioSpectrum has more features and value packed into an easy-to-use system than anything else around. Record and playback soundtracks for presentations, perform fast MIDI sequencing, automated mixing and more. Choose from a library of sound effects.

The Awesome Thunder Board.

Pop in the latest PC game software and hold on to your seat. Thunder Board explodes with full stereo sound for your PC. It allows up to 22KHz digital audio sampling to take full advantage of the blistering new games, dynamic filtering for crisp sound and an 11 voice synthesizer for great reproduction of musical sequences. Thunder Board even provides you with free software samples: NOVA 9 (the sequel to Stellar 7, an audio classic), Lemmings and Lexi Cross, three of the hottest new entertainment product on the market today. Each takes you for a ride on the most incredible sound system you can buy for the PC. There's more, like the Thunder Master software that's included free. It allows you to record and playback your own sound files. Use a microphone or another sound source. Mix pre-recorded sound files, and add special effects to your audio selections. Find out what you've been missing — get a Thunder Board.

Pro AudioSpectrum

Let's say you were giving a presentation to 50 people. You had incredible overhead transparencies. You had quotes that endorsed your product, typeset and used as part of your presentation. That would have impact. But what if you could present your customer's actual voice endorsing your product. That's more impact. You can do it with Pro AudioSpectrum, and sync it precisely with your visuals. What if you added a musical score to your presentation? More impact still. Pro AudioSpectrum turns your PC into a recording studio, with full MIDI capabilities, so musical compositions sound like the composers intended them to. Or, add ambient background sounds to your presentations — a ball park, crowds, sirens, singing birds and rustling leaves. Then, a special effect or two, to explode at the perfect spot, pops, pings, or the resonant sweep of white noise. That would really drive your point home!

The Multi-Media Performer

This single audio card transforms your computer into a full Microsoft Level 1 multimedia platform. One card — mega sound, with plenty of built-in instrument sounds, noise reduction features, studio and special effects, mixing features, output amplification — even a music clip library (jazz, pop, rock, classical and more!). And you can do it! It's fast, easy and fun. Record soundtracks, voice overs and more from a variety of stereo sources.

MEDIAVISION

BBA6816 **Thunder Board**	**$169.00**
BBA6818 **Pro AudioSpectrum** Dual	**$389.00**

Create Realistic, 3-D Landscapes That May Cause Vertigo!

Or View The Heavens In An On-Screen, Digitized Planetarium!

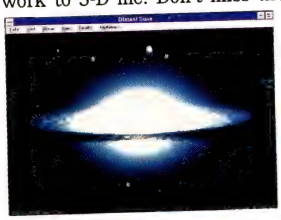
REVIEWER'S NOTEBOOK: *Amazingly realistic electronic landscapes that put you on the edge of your seat. Using new VistaPro is like hiring a helicopter and flying over some of the world's most picturesque natural wonders: Mt. St. Helens — before and after the eruption, legendary Half Dome and El Capitan in Yosemite, Crater Lake in Oregon and the Cauldera area of Olympus Mons — Mars! You can create your own scenes from the billions of randomly generated fractal landscapes built-in — and adjust camera angle, focal length, lens power and more. Assemble animated sequences and incredible dreamscapes with VistaPro's powerful animation engine. The result is stunningly realistic images that can move you right into the landscape.*

We were also impressed with VistaPro's sister product, Distant Suns. This is a fascinating astronomical playground for students, amateur astronomers and curious spectators. It displays the night sky with precise accuracy for any part of the world, including 9100 stars, 450 galaxies, nebulas and star clusters. Add up to 3,000 custom objects to the sky. Click on any object and bring up detailed information, including your choice of over 200 photos.

Arthur C. Clark, author of 2001: A Space Odyssey says "I'm really boggled, it's beautiful, especially when all the lights are off. I'm totally awed by what you have done!"

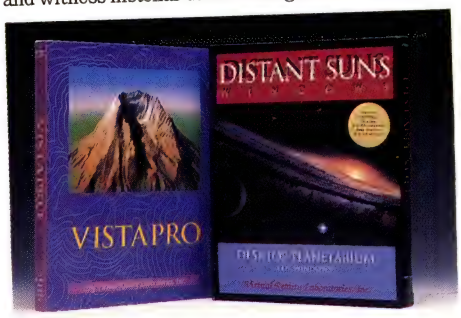
VistaPro.

Create 256-color images with high-quality resolution in true 3-D. Produce animated "flights" over custom landscapes, with several modes of coloring and shading and fractal image detail. Add trees and mountains, snow, waves, haze, rivers and cliffs. Zoom in, swoop in or swing out for a broader view. Allows you to paint your landscapes to produce thousands of possible effects. Light your scenes the way you want — daytime, midnight, sunrise or sunset, produce lifelike shadow detail and natural movement. You'll create images that trick your brain into thinking they're real! Also includes a special bonus program that creates landscapes from Mandlebrot, Julia and Lyapunov sets — bringing their wonderful work to 3-D life! Don't miss the animated flyby of Mars (and the Martian version of the Grand Canyon)!



Distant Suns Windows.

A time machine and a telescope! Distant Suns Windows allows you to travel to any date and see the unique view of the sky. The changing phases of the Moon, the planets and the stars, the constellations and more. Travel 1,000 years back in time and observe the exact sky that inspired the ancient Anasazi astronomers. Or discover how the Egyptian Pharoahs built the pyramids eternally aligned with distant suns. See the mysterious movement of Mercury and Venus, rare planetary eclipses, stellar occultations and witness instellar dust forming nebulas.



VIRTUAL REALITY LABS

BBA3283 **VistaPro**	**$89.95**
BBA3284 **Distant Suns**	**$89.95**
BBA3282-5 **Distant Suns & VistaPro Bundle** 5¼"	**Save $20**
BBA3282-3 **Distant Suns & VistaPro Bundle** 3½"	**Save $20**

VistaPro: *640k RAM w/540k free, hard disk w/3Mb free, VGA/SVGA graphics card (VESA driver), and driver.* ***Distant Suns:*** *Microsoft Windows, 286 or greater, EGA or VGA and hard drive.*

The RS Collection

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BUSINESS/HOME

- ☐ **Tax '91 (2 disks) (3980)** - Prepare & print your 1991 federal taxes easily & quickly. Includes all schedules A-SE & tax tips! (HD)
- ☐ **Amortization Tables 3.51 (2 disks) (1160)** - All types!
- ☐ **Brother's Keeper 5.0 (4 disks) (3120)** - Excellent, full featured genealogy program that's easy to use. (HD)
- ☐ **Clip Art Utilities (DOS) (2 disks) (3340)** - Manage, view, & convert art clip art.
- ☐ **DanCad 3-D (5 disks) (2860)** - Superb, full-featured CAD that does it all! (CGA) (HD)
- ☐ **Express Check 4.04 (2 disks) (1110)** - A great program to manage your checking accounts! Even prints checks!
- ☐ **FormGen 4.1a/FormFill 1.5 (2 disks) (3240)** - A very versatile form generator and form filler. Create and/or fill out any kind of form for home or business on any printer. Includes numerous sample forms to get you started!
- ☐ **Home Inventory 4.0 (3137)** - Helps you keep track of everything you own. Great for insurance.
- ☐ **Home & Business Legal Guide 7.5 (3 disks) (3330)** - Over 150 legal forms for almost everything including contracts, wills and living trusts. (Valid in all 50 states) (HD)
- ☐ **Mealmaster 6.31 (2 disks) (3160)** - A complete recipe filer. Comes with over 1200 recipes to start you off. (HD)
- ☐ **Names & Dates 4.23 (2 disks) (3140)** - Great personal information manger! Keeps track of anything and everything.
- ☐ **Painless Accounting 5.0 (3 disks) (1120)** - Complete, easy to use accounting! Includes GL/ AR/AP, billing, and more (HD)
- ☐ **PrintPartner (2 disks) (3260)** - PrintMaster/PrintShop clone that prints banners, signs and more. Includes 200+ graphics.
- ☐ **Resume Creators (2 disks) (3270)** - Create a customized resume and find the job that is right for you.
- ☐ **Sports Card Collection** (2 disks) (3080) - Keep track of all your collectible cards!

EDUCATION

- ☐ **Algebra Tutor (3 disks) (1820)** - Learn Algebra easily! (CGA-HD)
- ☐ **Elementary Math Tutor (3 disks) (1620)** - Learn basic skills.
- ☐ **Lotus 2.2 Learning System (5 disks) (1480)** - Learn Lotus 2.2 easily and quickly. (An RS exclusive!) (HD)
- ☐ **Skyglobe 2.5/Earthwatch 1.2 (2 disks) (1880)** - Look at the stars or the earth. Shows constellations, planets, stars, and more. Fascinating program with great graphics. (CGA)
- ☐ **Spelling/Vocabulary Tutor (3 disks) (1870)** - Improve your spelling and vocabulary!
- ☐ **Typing Teacher (2 disks)(1440)** - Learn to type, or improve your typing speed with this set of programs.

(CGA) Color Graphic Adapter (EGA) EGA Graphics (HD) Hard Disk

GAMES

- ☐ **Best Arcade Games (2 disks) (1660)** - 18 of the best arcade games. (CGA)
- ☐ **CGA Tetris Collection (2 disks)(1970)** - Seven great variations of the popular game. (CGA)
- ☐ **Kids' Games (2317)** - Fun for the under 12 set.
- ☐ **Super Solitaire (2 disks) (2460)** - 15 great versions. (CGA)

EGA/VGA GAMES

Note: These games require EGA or VGA graphics.

- ☐ **Best EGA Games (4 disks) (1680)** - 15 of the best EGA games!
- ☐ **EGA/VGA Tetris Collection (3 disks) (1920)** - 9 high resolution variations including a couple of 3-dimensional ones!
- ☐ **EGA Mouse Solitaire (3 disks) (1930)** - Eight fabulous Solitaire card games that use a mouse.
- ☐ **Commander Keen Collection (3 disks) (2240)** - Two of the best games of all time! Great graphics & sound. Truly superb games. (HD)
- ☐ **Captain Comic 4 (1925)** - Great sound, graphics & more!
- ☐ **Duke Nuk'em (1965)** - A new game that's probably the finest arcade style game available on a PC! (HD)
- ☐ **Dark Ages (1928)** - From the creators of Commander Keen!

MISCELLANEOUS

- ☐ **Best DOS Utilities (4 disks) (3520)** - Essential utilities for DOS. File finders, and numerous other handy utilities that will save you time. Very easy to use.
- ☐ **Online Bible 5.0 (14 disks) (3170)** - Complete KJV Bible. Includes Greek/Hebrew Lexicon and Cross Reference. (HD)
- ☐ **Screen Savers for DOS (2 disks) (4790)** - A superb collection of screen blankers for DOS!
- ☐ **Vaccines and Virus Killers Ver. 85 (4 disks) (3510)** - Protect your system from viruses! This set will find (and destroy!) over 500 viruses and 900+ virus strains.

WORDPERFECT 5.0/5.1

- ☐ **By Design (4255)** - Unleash the true potential of WordPerfect 5.1! Turns WordPerfect into a design studio! (HD)
- ☐ **WordPerfect 5.0/5.1 Tools (3 disks) (3750)** - 17+ great utilities for WordPerfect 5.0/5.1.
- ☐ **WordPerfect 5.1 Learning System (4 disks) (4230)** - Learn how to use WordPerfect 5.1 easily and quickly with this great tutorial (WordPerfect 5.1 is NOT required.)
- ☐ **WordPerfect 5.1 Macros (2 disks) (4220)** - Over 100 helpful macros for WordPerfect 5.1.
- ☐ **PC-Draft II & III (3 disks) (3760)** - Create clip art & graphics for WordPerfect 5.0/5.1/ Windows. (CGA) (HD)

WINDOWS

Note: These disks require Windows 3.0 or 3.1

- ☐ **AtlUS for Windows (4126)** - A fun and educational atlas of the United States. You can even add your own entries!
- ☐ **Best Games for Windows (4 disks) (4860)** - 30+ games for Windows!
- ☐ **Chess for Windows (4639)** - Play the great game of chess.
- ☐ **Clip Art Utilities (Windows) (2 disks) (4890)** - Manage, view, & convert art.
- ☐ **The Complete Icon Collection (4 disks) (4580)** - Over 4000 of the best icons available!
- ☐ **Cursor/Hourglass Changers (4885)** - Change the cursor and hourglass into any shape you choose!
- ☐ **Grab Plus 6.2 for Windows (2 disks) (4570)** - Address and print out envelopes from within any Windows application.
- ☐ **Graphics & Gimmicks for Windows (4597)** - Great graphics & practical jokes for Windows!
- ☐ **Hyperdisk 4.21 (4539)** - Make Windows run 2 to 10 times faster! (Will also help other programs run faster.)
- ☐ **Icon Utilities (3 disks) (4260)** - A complete set of utilities to create, modify, view and manage icons.
- ☐ **Information Managers for Windows (3 disks) (4120)** - A collection of personal information managers, address & phone books, calendars, and reminders with alarms.
- ☐ **File Utilities for Windows (3 disks) (4110)** - Utilities for finding, deleting, moving, copying, searching and viewing files!
- ☐ **Menu Systems for Windows (4 disks) (4880)** - Makes Windows even easier to use.
- ☐ **Metz Utilities (2 disks) (4690)** - The utilities that received an Editor's Choice from PC Magazine!
- ☐ **Screen Savers for Windows (4615)** - Seven different screen savers for Windows.
- ☐ **Utilities for Windows (4 disks) (4510)** - 50+ utilities that will help you get the most out of Windows, as well as making Windows easier to use. A must for any Windows user!
- ☐ **Windows Editors & Notepads (3 disks) (4320)** - Two word processors and four text editors that are more powerful than Windows Write and Notepad.
- ☐ **Windows Drawing & Paint (2 disks) (4310)** - Three programs for most types of drawing including desktop publishing, CAD and object oriented drawing.
- ☐ **Windows Wallpaper 1 (4 disks) (4520)** - 75+ backgrounds.
- ☐ **WinSpell (2 disks) (4870)** - Spell checker for most Windows programs!
- ☐ **Word for Windows Macros (2 disks) (4930)** - The most complete collection of macros for Word for Windows!

Shareware programs require separate payment to the authors if found useful.

ART SOLUTIONS CLIP ART PACKAGES

This is high quality original vector based clip art. Vector based art will not lose resolution or features when scaled in any way. The images are available in four formats: WPG (WordPerfect Graphics), EPS (Encapsulated Postscript), CGM (Computer Graphics Metafile), and PCX (PC-Paintbrush). These packages are available only through Reasonable Solutions and are backed by our lifetime unconditional money-back guarantee! Each volume contains 100 images per package, and are only $14.95 per package. Price includes full registration. (The price is the same for both 5¼ & 3½" disk sizes!)

Format:	*PCX*	*WPG*	*EPS*	*CGM*	*Format:*	*PCX*	*WPG*	*EPS*	*CGM*
Animals Vol. 1	☐27100-P	☐27100-W	☐27100-E	☐27100-C	Education Vol. 1	☐26100-P	☐26100-W	☐26100-E	☐26100-C
Animals Vol. 2	☐27200-P	☐27200-W	☐27200-E	☐27200-C	Education Vol. 2	☐26200-P	☐26200-W	☐26200-E	☐26200-C
Business Vol. 1	☐21100-P	☐21100-W	☐21100-E	☐21100-C	Headlines Vol. 1	☐24100-P	☐24100-W	☐24100-E	☐24100-C
Business Vol. 2	☐21200-P	☐21200-W	☐21200-E	☐21200-C	Headlines Vol. 2	☐24200-P	☐24200-W	☐24200-E	☐24200-C
Church Vol. 1	☐23100-P	☐23100-W	☐23100-E	☐23100-C	Misc. Vol. 1	☐25100-P	☐25100-W	☐25100-E	☐25100-C
Church Vol. 2	☐23200-P	☐23200-W	☐23200-E	☐23200-C	Misc. Vol. 2	☐25200-P	☐25200-W	☐25200-E	☐25200-C

ATM FONTS FOR WINDOWS

Note: These fonts require Adobe Type Manager for Windows.

- ☐ ATM Fonts Vol.1 (4 disks) (4710) - 30+ fonts for ATM.
- ☐ ATM Fonts Vol.2 (4 disks) (4720) - 30+ fonts for ATM.
- ☐ ATM Fonts Vol.3 (4 disks) (4730) - 30+ fonts for ATM.
- ☐ ATM Fonts Vol.4 (4 disks) (4740) - 30+ fonts for ATM.
- ☐ ATM Fonts Vol.5 (4 disks) (4750) - 30+ fonts for ATM.
- ☐ ATM Fonts Vol.6 (4 disks) (4760) - 30+ fonts for ATM.
- ☐ ATM Fonts Vol.7 (4 disks) (4770) - 30+ fonts for ATM.
- ☐ ATM Fonts Vol.8 (4 disks) (4780) - 30+ fonts for ATM.

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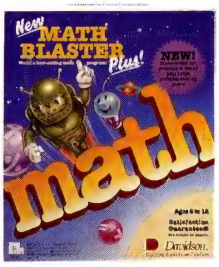
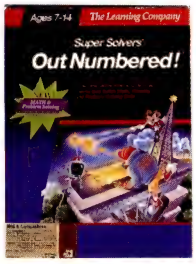
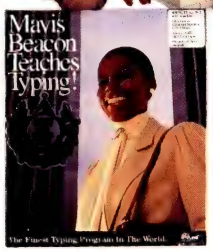


New Math Blaster Plus: Regular Price: $49.95 World's best-selling math program has fun "blasternaut" game!



Super Solvers Outnumbered: Regular Price: $49.95 This highly-recommended program develops math, problem-solving and other skills. *Available for IBM, Macintosh, and compatibles only.*



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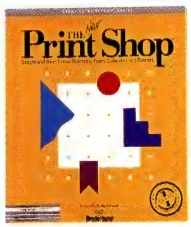

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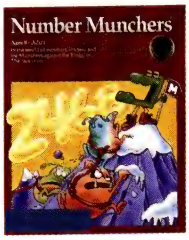

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- ages 3-7
- ages 7-10
- ages 10-13+

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• LANGUAGE ARTS AND READING • CRITICAL THINKING SKILLS
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How the Club Operates

Try your first computer program FREE for 15 days at no risk or obligation. Just select the software package of your choice, complete the coupon at right and mail it today!

We'll send you the program you select. If you're pleased with it, you'll pay just $9.95—the Charter Member's price—plus shipping and handling, a savings of up to $50.00 off the retail price.

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Enjoy a 15-Day Free Trial

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925 Oak Street, Scranton, PA 18515, Dept. ADGA42

YES! Please send me the program I have indicated below to preview for 15 days at no risk or obligation. I may return the program after 15 days and have no further obligation. If I am pleased with the program, I'll pay for it at the special new member price of only $9.95 plus shipping and handling, and enroll as a new member under the terms outlined on this page. As a new member, I need to buy just 3 more selections at regular club prices in the next year and may cancel any time thereafter.

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City_____ State_____ Zip_____

Telephone ( )_____

Name of Program (Print in box)

1. AGE of child (check one): ☐ 3-7 ☐ 7-10 ☐ 10-13+
2. Computer you own and disk size required (check one):
   ☐ IBM/Tandy & compatibles with 5.25" disk drive
   ☐ IBM/Tandy & compatibles with 3.5" disk drive
   ☐ Apple II family & compatibles with 5.25" disk drive
   ☐ Macintosh & compatibles with 3.5" disk drive
3. Child's name_____
   Child's birthdate: Month_____ Day_____ Year_____
4. Please check below if you have a:
   ☐ Printer ☐ Modem ☐ Color Monitor
5. Parent's signature_____

709

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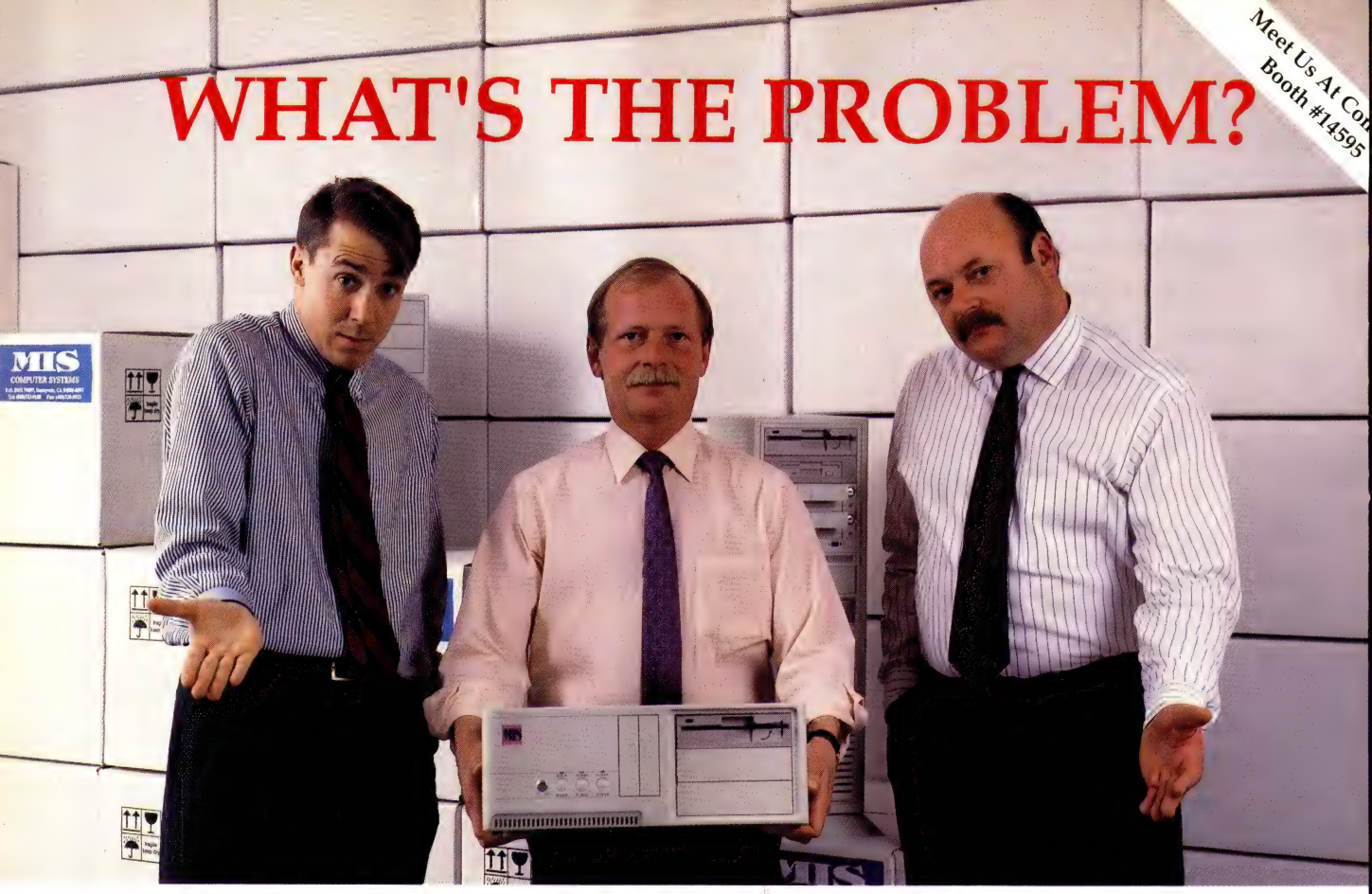

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WINCHECK 3.0	Full **Quicken-clone.** Even prints checks.	WIN41
MONEYSMITH	Accounting program for home or small business.	WIN51
VISUAL BASIC RUNTIME	Necessary for many new Windows applications.	WIN44
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UNICOM 3.0	Multitasking communications with ZMODEM.	WIN8
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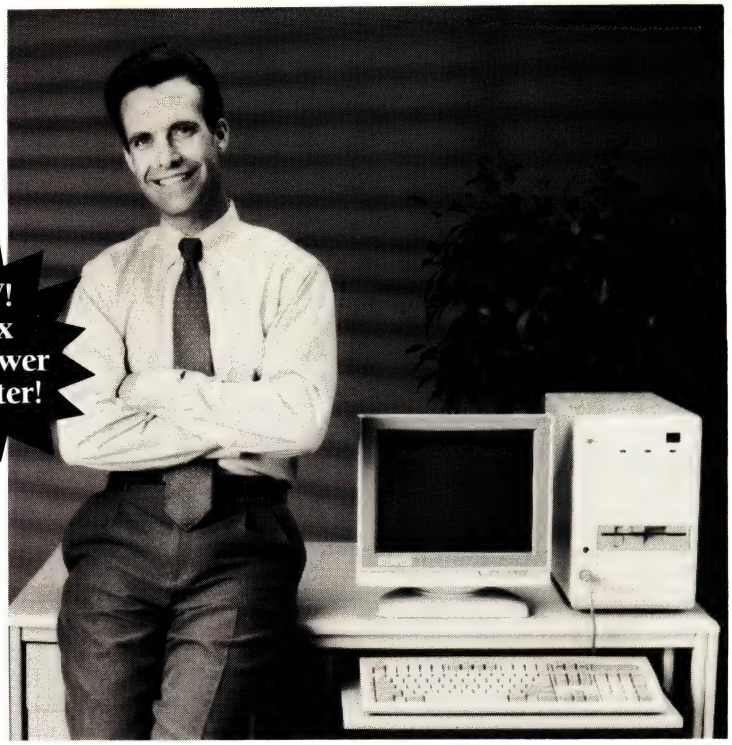

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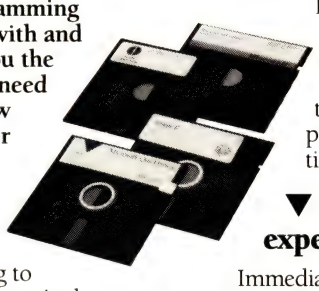

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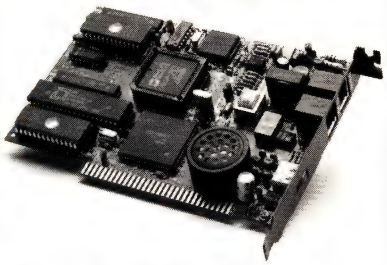

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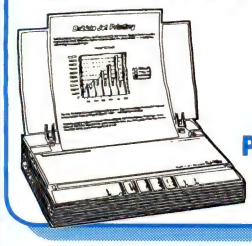

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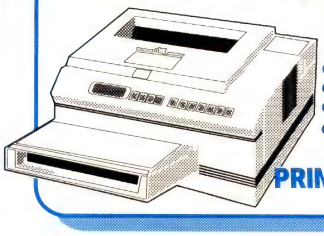
- Portable convenience 360 x 360 dpi
- 83 cps high quality
- Optional feeder & battery pack

PRINTERS PLUS PRICE: CALL
LIST PRICE $499

C.ITOH CI-4



FEATURES

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- Universal 120 sheet paper tray
- 300 dpi resolution
- Accepts HP font cartridges

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FAX: 703-706-5321

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Circle 228 on reader service card.

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PCC 4/92-4

1. **Where do you use your computer?** (Check one only):
   A. ☐ Home B. ☐ Business C. ☐ Both
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   D. ☐ IBM/Compatible Laptop ☐ F. MAC
   E. ☐ IBM/Compatible Desktop
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G. ☐ PC
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SOFTWARE
Q. ☐ Accounting
R. ☐ Spreadsheet
S. ☐ Personal Finance
T. ☐ Desktop Publishing
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V. ☐ Database Manager
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R. ☐ Spreadsheet
S. ☐ Personal Finance
T. ☐ Desktop Publishing
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V. ☐ Database Manager
W. ☐ Graphics
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331-337

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338-343

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MR. BIOS-INTEL 286	$99.95
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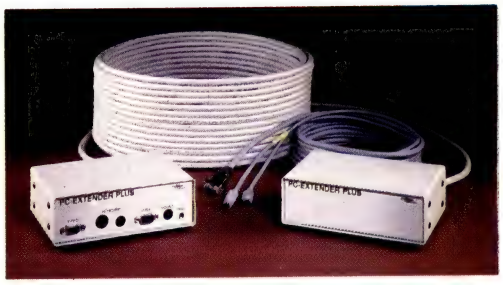

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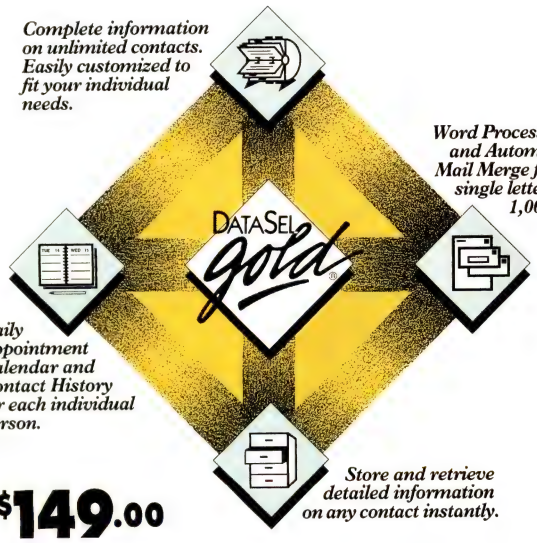

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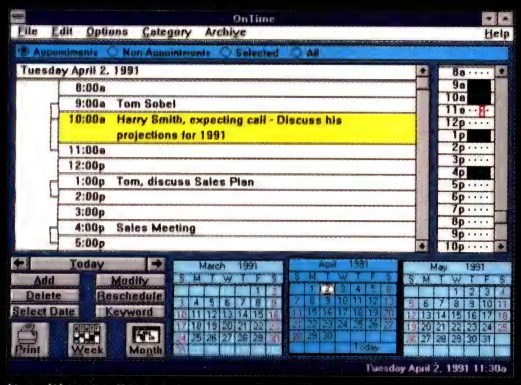

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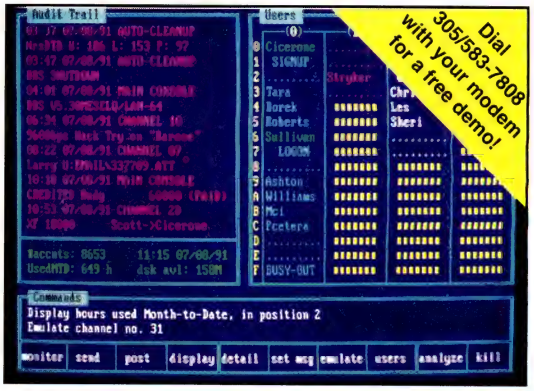

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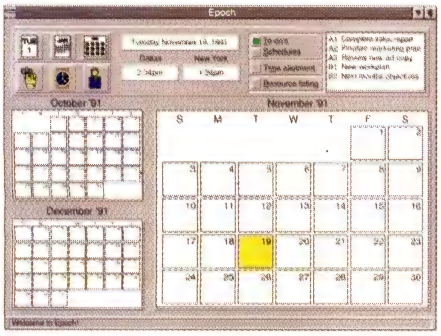

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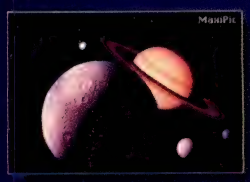

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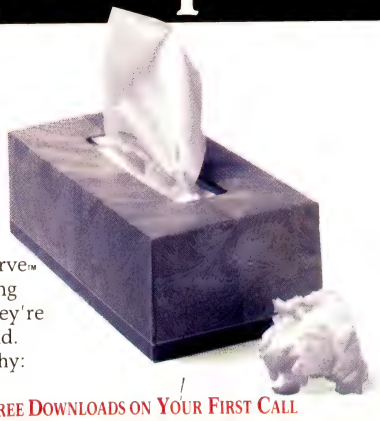

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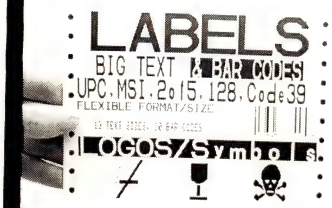

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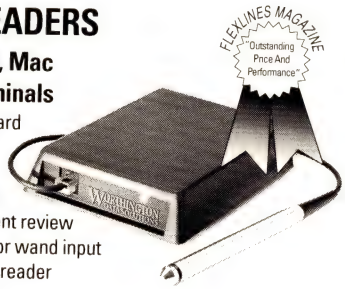

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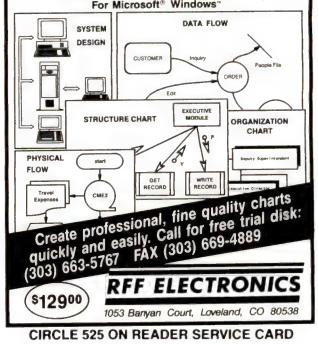

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MACIIci, IIsi	1MB KIT	M0291LL-A	$ 67.00
MACIIsi	2MB KIT	M0514LL-A	$ 174.00
MACIIci, IIsi	4MB KIT	M0292LL-A	$ 193.00
MACIIsi	8MB KIT	M0513LL-A	$ 678.00
MACIIci, IIsi	16MB KIT	No # Available	$ 872.00
MACIIfx	4MB KIT	M0376LL-A	$ 212.00
	16MB KIT	No # Available	$ 930.00
MAC SE, SE30, Plus, II, IIcx, IIx	4MB KIT	M02707	$ 212.00

AST

Model	Memory Added	Part # EQ	PRICE
BRAVO 486/25	2MB SIMM	500718-004	$ 145.00
PREMIUM 386SX/16, SX20 & 386/25, 33	1MB MODULE	500780-003	$ 58.00
	4MB MODULE	500780-004	$ 251.00
	8MB KIT		$ 513.00
PREMIUM 386C, WKST & BRAVO	1MB KIT	500510-007	$ 77.00
	4MB KIT	500510-008	$ 242.00
PREMIUM 286			
Fastram	512-2MB BD	500394-001	$ 271.00
Fastram Kit	512 UPGRADE	500510-001	$ 49.00
Adv. Fastram	2–8MB BD	500565-001	$ 581.00
Adv. Fastram Kit	2MB UPGRADE	500510-002	$ 115.00
PREMIUM 386	1MB KIT	500510-003	$ 77.00
	4MB KIT	500510-004	$ 251.00

CHIPS

STANDARD SIMMS

Part#	PRICE
256 X 8-10	$ 16.00
256 X 9-10	$ 16.00
256 X 9-80	$ 16.00
256 X 9-70	$ 17.00
1 X 8-10	$ 47.00
1 X 8-80	$ 43.00
1 X 9-10	$ 42.00
1 X 9-80	$ 44.00
1 X 9-70	$ 49.00
4 X 9-80	$ 183.00
4 X 8-80	$ 173.00

DRAM

Part#	PRICE
1 X 1-10	$ 5.00
1 X 1-80	$ 5.00
1 X 1-70	$ 5.00
256-10	$ 1.79
256-80	$ 1.89
256-70	$ 2.09
256 X 4-10	$ 5.00
256 X 4-80	$ 5.33
4464-10	$ 2.13
4464-80	$ 2.42
4164-10	$ 1.94

LASER PRINTER MEMORY

Model	Memory Added	Part # EQ	PRICE
H.P. LASERJET IIP, III, IIID	1MB MODULE	H33474B	$ 82.00
	2MB MODULE	H33475B	$ 125.00
	3MB MODULE	H33476B	$ 173.00
	4MB MODULE	H33477B	$ 212.00
H.P. LASERJET II, IID	1MB MODULE	H33443B	$ 82.00
	2MB MODULE	H33444B	$ 125.00
	4MB MODULE	H33445B	$ 212.00
H.P. DESKJET	256K MODULE		$ 86.00
IBM 4019, 4019e	1MB MODULE	1039136	$ 92.00
	2MB MODULE	1039137	$ 141.00
	3.5MB MODULE	1038675	$ 218.00
OKi LASER 400	1MB MODULE	70014701	$ 121.00
	2MB MODULE	70015801	$ 170.00
OKi LASER 800, 820	1MB MODULE	70016501	$ 121.00
	2MB MODULE	No # Available	$ 170.00
	4MB MODULE	No # Available	$ 267.00
PANASONIC 4450	1MB MODULE	KXP440	$ 155.00
PANASONIC 4420, 4450i	1MB MODULE	KX443	$ 112.00
	2MB MODULE	KX441	$ 160.00
	4MB MODULE	No # Available	$ 257.00
CANON LBP-4	1MB MODULE	S63-2230	$ 164.00
	2MB MODULE	S63-2230/2	$ 222.00
CANON LBP-8II	1MB BOARD	S63-1300	$ 96.00
	2MB BOARD	S63-1880	$ 145.00
	4MB BOARD	No # Available	$ 261.00
APPLE LASERWRITER	1MB KIT	M6005	$ 86.00
	4MB KIT	M6006	$ 242.00
EPSON EPL6000	2MB MODULE	IBS401	$ 170.00
	4MB MODULE	IB401/4	$ 267.00
TI MICROLASER	1MB MODULE	2559810-8001	$ 86.00
TOSHIBA PAGELASER 6	2MB MODULE		$ 179.00
	4MB MODULE		$ 267.00
QMS PS410	1MB UPGRADE	2600090-903	$ 154.00
	2MB UPGRADE	2600090-902	$ 212.00
	4MB UPGRADE	2600090-901	$ 319.00

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83S87-16	$ 164.00
83S87-20	$ 174.00
83D87-16	$ 183.00
83D87-20	$ 183.00
83D87-25	$ 183.00
83D87-33	$ 203.00

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2C87-8	$ 77.00
2C87-10	$ 86.00
2C87-12	$ 106.00
2C87-20	$ 135.00
3C87SX-16	$ 141.00
3C87SX-20	$ 145.00
3C87-20	$ 183.00
3C87-25	$ 183.00
3C87-33	$ 193.00

LAPTOP MEMORY

Model	Memory Added	Part # EQ	PRICE
TOSHIBA			
T1000SE, XE & 2000SX	1MB KIT	PC14-PA8311U	$ 112.00
	2MB KIT	PC14-PA8312U	$ 174.00
	4MB KIT		$ 422.00
	8MB KIT		$ 678.00
T1200XE	2MB KIT	PC-PA8306U	$ 112.00
T1600	2MB KIT	PC8-PA8302U	$ 112.00
T3100SX	2MB KIT	PC15-PA8308U	$ 112.00
	4MB KIT	PC15-PA8310U	$ 228.00
T3100E	2MB KIT	PC9-PA8341U1	$ 112.00
T3200SX	2MB KIT	PC12-PA8307U	$ 112.00
	4MB KIT	PC12-PA8309U	$ 228.00
T3200	3MB KIT	PC6-PA7137U	$ 194.00
T5100	2MB KIT	PC7-PA8301U	$ 131.00
T5200, 5200C, 8500	2MB KIT	PC10-PA8313U	$ 112.00
	8MB KIT	PC10-PA8313U	$ 678.00
COMPAQ			
Portable III	Modem/Interface	107808-001	$ 86.00
	0-6MB BD	107811-001	$ 183.00
	512 KIT	107331-001	$ 38.00
	2MB KIT	107332-001	$ 115.00
Portable 386/20	Modem/Interface	107707-001	$ 86.00
	1MB KIT	107651-001	$ 212.00
	4MB EXP	107653-001	$ 610.00
Portable LTE286	1MB BOARD	117081-001	$ 115.00
	2MB BOARD	117081-002	$ 164.00
	4MB BOARD	117081-003	$ 513.00
Portable LTE386S/20	1MB BOARD	121125-001	$ 319.00
	4MB BOARD	121125-002	$ 581.00
SLT/286	1MB BOARD	110235-001	$ 154.00
	4MB BOARD	110237-001	$ 513.00
SLT/386	1MB BOARD	118303-001	$ 154.00
	2MB BOARD	118304-001	$ 251.00
	4MB BOARD	118305-001	$ 513.00
NEC			
Prospeed SX/20	1MB BOARD	PC-43-21	$ 203.00
	4MB BOARD	PC-43-22	$ 484.00
Prospeed 286, 386SX/16	1MB BOARD	PC-21-21	$ 199.00
	2MB BOARD	PC-21-26	$ 416.00
	4MB BOARD	PC-21-22	$ 484.00
Prospeed 386	2MB CARD	PC-31-21	$ 242.00
	8MB CARD	PC-31-22	$ 969.00
ZENITH			
Supersport Sx	2MB ALPHA	ZA-180-86	$ 183.00
	2MB BETA	ZA-180-87	$ 183.00
	2MB EXP	ZA-180-64	$ 193.00
Slimport, 286e	2MB CARD	ZA-180-64	$ 193.00
	4MB CARD	ZA-180-71	$ 455.00
Turbosport 386e	1MB BOARD	ZA-3034-ME	$ 222.00
	4MB BOARD	ZA-3034-ME/4	$ 513.00
OTHER LAPTOPS			
MAC Portable	1MB BOARD	M0248	$ 212.00
	2MB BOARD	M0248/2	$ 649.00
	3MB BOARD	M0248/3	$ 824.00
	4MB BOARD	M0248/4	$ 1,066.00
AST Executive Notebook	1MB SIMM	500814-001	$ 86.00
	4MB SIMM	500814-003	$ 251.00
SHARP PC-6220 Notebook	1MB BOARD	CE-621B	$ 174.00
Ti Travelmate 2000	1MB BOARD	2568034-0001	$ 169.00
Everex Tempo Lx	2MB MODULE	PCA-00053-00	$ 358.00
Panasonic CF-170,270	1MB CARD	CF-BA165	$ 222.00

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This April Fools' Day, I'm on Your Side

This April Fools', let's work together. You set up the chumps, I'll tell them they've been had. By Penn Jillette

APRIL FOOLS' DAY is not my favorite tradition. For a rip-off artiste like me, April 1st is like New Year's Eve to a drunk—amateur night. I started to put together some stupid, phoney "Pen-Based Virtual Reality for Under Fifty Bucks" thing, but it wasn't funny and I didn't feel good about it.

I don't want to scam you (other than the meta-scam of passing myself off as a computer writer). *PC/Computing* readers have treated me very well. You people stop me on the street and at my shows and say kind things about these columns. The letters to the editor have been, for the most part, complimentary. I've recorded the ones that have offered constructive criticism in a little SideKick 2.0 file on my traveling Zen, and these dirtbags will be dealt with individually. (Never put a return address on a nasty letter about me—I travel, I have spare time, I take everything personally, I have no mercy, and I never take things in the right spirit or let bygones be.)

So I decided to give you an April Fools' present—a realistic-looking ad that offers the hottest computer equipment for stupidly low prices.

There must be someone in your office you don't like who bought one or more of the items in the "ad" somewhere else, at full price. After reading the fine advertisement printed at the bottom of this page, cut it out and put it on Mr. or Ms. Chump's desk. Done. Don't photocopy it to keep the mag pristine—it's the glossy paper and the other ads on the back that will really sell it. (This is no fly-by-night ad. And just wait, next year the prices will be real.)

They'll be bummed that they "wasted" all that hard-earned money. An enemy suffering should be enough to make your day, but if they call the phone number on the ad, you'll really luck out. They'll get a tape of me berating them, telling them they've been had. Yippee.

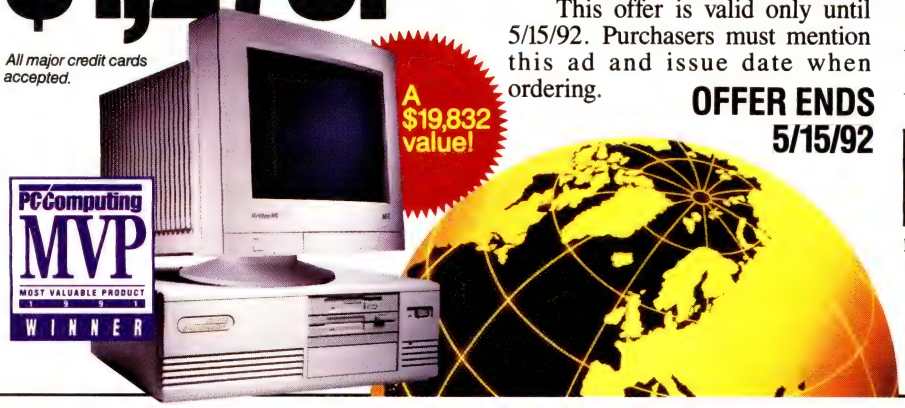
I like it when we work together. ◪

Penn Jillette is more than half of Penn & Teller.

This is not a real ad. This is a joke. Cut on the dotted line. This is not a real ad. This is a joke. Cut on the dotted line. This is not a real ad. This is a joke. Cut on the dotted line. This is not a real ad. This is a joke.

ONLY PC COMPUTING READERS CAN GET THIS COMPAQ DESKPRO/M 486 SYSTEM FOR $1,278.43

All major credit cards accepted.



As part of a test marketing program, B&R Computers, in cooperation with *PC Computing* magazine, is making one of the greatest PC offers of all time.

PC Computing readers can now buy this Compaq Deskpro/M 486, 33MHz, 200MB system—with seven EISA expansion slots, four drive bays and 8MB of RAM included—for only $1,278.43! The system includes an 800-by-600 pixel, 256-color Super VGA adapter card with a built-in graphics accelerator chip—all at no extra charge!

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Compaq LTE 386s/20	*3:05 Hours*
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Zenith MastersPort 386SL	*2:26 Hours*
AST Premium Exec	*2:08 Hours*
IBM PS/2 Model L40SX	*1:55 Hours*

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